HARVARD

School of Public Health

ADVANCING THE PUBLIC'S HEALTH THROUGH LEARNING, DISCOVERY, AND COMMUNICATION

CATALOG

2001-02

HARVARD SCHOOL OF PUBLIC HEALTH – DEPARTMENTS AND DEGREE PROGRAMS, 2001–02

DEFINITION OF TERMS

Degrees

DPH	Doctor of public health
MOH	Master of occupational health
MPH	Master of public health
PhD	Doctor of philosophy
SD	Doctor of science
SM1	Master of science (40-credit program)
SM2	Master of science (80-credit program)

Diplomas for the MPH, DPH, and MOH degrees show the degree only. Diplomas for the SM and SD degrees also show the name of the department.

All PhD programs are offered under the aegis of Harvard University's Graduate School of Arts and Sciences.

Concentrations

The names of the departments generally convey their educational and research specialization, or *concentration*. Where several concentrations are available within a department, these are listed in the chart at right. In the Department of Environmental Health only, the concentrations are shown on diplomas. Areas of interest, described in this catalog but not listed at right, are generally less formal programs than concentrations or are subspecializations within them.

DEPARTMENT OF BIOSTATISTICS

Biostatistics
SM1, SM2, SD

Health decision sciences
SM2, SD

DEPARTMENT OF CANCER CELL BIOLOGY

SD
PhD (through the Division of Biological Sciences)

DEPARTMENT OF ENVIRONMENTAL HEALTH

Environmental epidemiology
SM1, SM2, SD

Environmental science and engineering
SM1, SM2, SD

Occupational health
MOH, SM1, SM2, SD, DPH

Physiology
SD
PhD (through the Division of Biological Sciences)

Population genetics
SD

DEPARTMENT OF EPIDEMIOLOGY

SM1, SM2, SD, DPH

DEPARTMENT OF HEALTH AND SOCIAL BEHAVIOR

SM1, SM2, SD

DEPARTMENT OF HEALTH POLICY AND MANAGEMENT

Health care management for physicians
SM1

Health policy and management
SM1, SM2, SD

Health policy
PhD (through university program)

DEPARTMENT OF IMMUNOLOGY AND INFECTIOUS DISEASES

SD
PhD (through the Division of Biological Sciences)

DEPARTMENT OF MATERNAL AND CHILD HEALTH

SM1, SM2, SD, DPH

DEPARTMENT OF NUTRITION

SD, DPH
PhD (through the Division of Biological Sciences)

DEPARTMENT OF POPULATION AND INTERNATIONAL HEALTH

International health epidemiology and ecology
SD, DPH

International health policy and economics
SD, DPH

Population and international health
SM2

Population and reproductive health
SD, DPH

MASTER OF PUBLIC HEALTH PROGRAM

Clinical effectiveness

Family and community health

Health care management

International health

Law and public health

Occupational and environmental health

Quantitative methods
MPH

DIVISION OF BIOLOGICAL SCIENCES

Cancer cell biology

Environmental health physiology

Immunology and infectious diseases

Nutrition
PhD

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FROM THE *dean*

THE TWENTIETH CENTURY HAS WITNESSED THE GREATEST gains in quality and duration of life. Most of the gains achieved prior to antibiotics and vaccines are truly attributable to public health. In the United States, for example, life expectancy has been extended from an average of 47 years in 1900 to almost 80 years in 2001. Yet there are major disparities in life expectancy and harsh inequities in individuals' ability to get access to the care they need—both in different parts of the world and within this wealthy country. Some infectious diseases have been vanquished, but new ones such as AIDS emerge or reemerge in drug-resistant strains. Violence, injuries, the great parasitic diseases that kill and handicap millions, environmental and occupational hazards, and health management and financing issues are just some of the challenges within the purview and mandate of public health. The improvement of the health of the nation's and the world's populations demands diverse professional skills combined with the integration of varied disciplines.

The courses, departments, centers, programs, and facilities described here in the catalog of the Harvard School of Public Health reflect the scope of the contemporary public health enterprise. The interests and expertise of faculty at the school are similarly broad, extending across the biological, social, and numeric sciences. There are programs and projects ranging from the molecular biology of AIDS vaccines to the epidemiology of cancer; from women's and children's health to quality-of-care measurement; from risk assessment to international health and human rights. All of these programs are approached with a true sense of dedication on the part of the faculty, students, and staff and with a mutual respect for different ways of contributing to our shared purpose.

Our overarching mission is to advance the public's health through learning, discovery, and communication. Our objectives are to provide the highest level of education for public health scientists, practitioners, and leaders; to foster new discoveries leading to the improved health of the people of this country and all nations; to strengthen health capacities and services for communities; and to inform policy debate, disseminate health information, and increase awareness of public health as a public good and a fundamental right.

We are engaged in an enterprise of vital importance to every individual and to society. We welcome those who wish to help us meet these challenges and share the satisfying work of changing the world of health and improving the health of the world.

Barry R. Bloom
Dean

THE HARVARD SCHOOL OF *public health*

THE HARVARD SCHOOL OF PUBLIC HEALTH IS A DIRECT DESCENDANT OF the first professional training program in public health in America, the Harvard-MIT School for Health Officers, a joint venture that began in 1913. In 1922 Harvard split off from MIT, and the Harvard School of Public Health was formally established. In 1946 the school celebrated its new status as a freestanding faculty of Harvard University, no longer an administrative part of the medical school.

Since its founding the school, through its faculty and graduates, has been at the forefront of efforts to stem disease and promote health worldwide. During the early years the focus was on infectious diseases, deadly workplace exposures, and sanitation—from Alice Hamilton's pioneering studies of lead and mercury poisoning, to Thomas Weller's path-breaking research on the polio virus and Philip Drinker's invention of the iron lung. More recently the school has expanded its reach to new areas, including the effects of race, gender, class, and social isolation on health; the reform of national health systems; and cutting-edge research on the biomarkers of disease. Three Nobel Prizes, a Lasker Prize, two MacArthur Awards, presidential citations, and countless other honors attest to the excellence and impact of this work. Five successive HSPH alumni led the U.S. Centers for Disease Control and Prevention (1962–1989) for an unprecedented 27 years. More difficult to quantify—but a far better gauge—are the perceptible gains in length and quality of life that have been realized through all these efforts.

Today the faculty of the Harvard School of Public Health includes almost 350 members from the diverse fields and disciplines that constitute public health. The student body comprises over 900 individuals from throughout the United States and several dozen other countries. Students, like faculty, come from an array of fields, and include physicians (40 percent of the student body), health services administrators, epidemiologists, nurses, dentists, lawyers, statisticians, environmental scientists, engineers, research assistants, psychologists, and social workers. Approximately one third of HSPH students are enrolled in the interdisciplinary master of public health program, one third in master of science programs, and one third in doctoral (doctor of science, doctor of public health, or doctor of philosophy) programs.

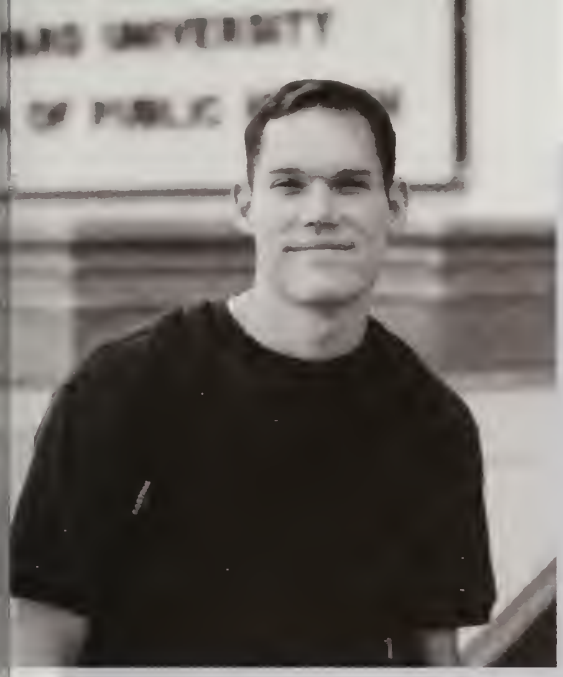
The school is organized into ten academic departments, the locus of most teaching and researching activity; two interdisciplinary divisions (Biological Sciences and Public Health Practice); the Office for Professional Education (for the MPH program); and fifteen specialized research centers. The school's academic programs are described in detail here in the catalog.

BIOSTATISTICS INVOLVES THE THEORY AND APPLICATION OF STATISTICAL SCIENCE TO ANALYZE PUBLIC HEALTH PROBLEMS AND TO FURTHER BIOMEDICAL RESEARCH.

DEPARTMENT OF *biostatistics*

THE FACULTY INCLUDES LEADERS IN THE DEVELOPMENT OF STATISTICAL methods for clinical trials and observational studies, studies on the environment, animal experiments, and longitudinal studies. Members of the department participate in large multidisciplinary projects and serve on many national and international advisory committees. The department's research in statistical methods and its interdisciplinary collaborations provide many opportunities for student participation.

Current departmental research includes the development of statistical and computing methods for clinical trials, including survival and sequential analysis methodology; environmental and epidemiologic research, including methods for longitudinal studies, analyses with incomplete data, and meta-analysis; statistical aspects of the study of AIDS and cancer; collaborative clinical research in the treatment of cancer and AIDS; quantitative problems in health-risk analysis, technology assessment, and clinical decision making; statistical methodology in psychiatric research and in genetic studies; Bayesian statistics; statistical computing; computational biology; and collaborative research activities with biomedical scientists in other departments at HSPH, Harvard Medical School, and affiliated hospitals.



CARLOS Brain

MASTER'S STUDENT, DEPARTMENT OF BIOSTATISTICS

Born and raised in Miami, Florida, Carlos Brain left a high school/college conservatory in his hometown to study music at the University of Minnesota in Minneapolis under an oboist in the St. Paul Chamber Orchestra. He completed a master's degree in music performance in 1995 and another master's in statistics in 1998.

In the fall of 1999, Brain began an SM program at HSPH in biostatistics. He says he was attracted to the field because he found "the application of statistics to medical and public health problems both meaningful and challenging." And he was attracted to HSPH because it has "a very active department, and I knew I would be learning from professors who had done and were doing influential work in the field."

While in school Brain has been involved in cancer clinical trials at the Dana-Farber Cancer Institute. He plans to continue working on the design and analysis of clinical trials, either in industry or at an academic institution like Dana-Farber.

DEGREE PROGRAMS IN BIOSTATISTICS

As described below, the department offers both 80-credit and 40-credit master of science (SM) programs and a doctor of science (SD) program with a concentration in biostatistics, as well as an 80-credit SM program and an SD program with a concentration in health decision sciences. Detailed information about requirements and elective options can be found in a handbook distributed by the department. A master of public health program in quantitative methods and a doctoral program in molecular epidemiology are described in the interdisciplinary section of this catalog.

The programs offered by the Department of Biostatistics provide rigorous training in the development of methodology, collaboration, teaching, and consultation on a broad spectrum of health-related problems. The department prepares students for academic and private-sector research careers in the fields of biostatistics and health decision sciences. Recent graduates have assumed faculty posts at universities and schools of public health, as well as positions in research laboratories, federal government centers, pharmaceutical companies, and research institutes.

Applicants to the department should have successfully completed calculus through multivariable integration and at least one semester of linear algebra and have knowledge of a programming language such as FORTRAN or C. In addition, applicants are strongly encouraged to have completed courses in probability, statistics, advanced calculus, and numerical analysis. Practical knowledge of a statistical computing package such as SAS, SPSS, S-PLUS, or Stata is also desirable.

Funding is available to qualified students pursuing the doctoral degree. Most of the funding is through five biostatistics training grants in AIDS, cancer, the environment, mental health, and public health training for underrepresented minorities. These traineeships require U.S. citizenship or permanent residency. Other limited funding is awarded on a competitive basis to qualified applicants.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Introduction to SAS

Principles of Biostatistics I and II

Introduction to Statistical Methods

Statistics for Medical Research—Introductory, II, Advanced, and Translational

Analysis of Rates and Proportions

Regression and Analysis of Variance in Experimental Research

Survey Research Methods in Community Health

Applied Regression for Clinical Research

Principles of Clinical Trials

Basics of Statistical Inference

Applied Survival and Discrete Data Analysis

Survival Methads in Clinical Research

Applied Langitudinal Analysis

Fundamental Concepts in Gene Mapping

Statistical Genetics in Camplex Human Disease

Prabability Theary and Applicatians I and Prabability II

Statistical Inference I and II

Methads I and II

Research Synthesis and Meta-Analysis Applicatians in Public Health and Clinical Medicine

Sample Surveys

Nanparametric Methads

Analysis af Failure Time Data

Analysis af Multivariate and Langitudinal Data

Design af Scientific Investigatians

Advanced Statistical Computing

Bayesian Methadalagy in Biastatistics

Statistical Prablems in Drug Develapment

Camputatianal Methads far Categarical Data Analysis

Statistical Methods in Human Genetics

Statistical Science Outreach

Statistical Camputing Enviranments

Applied Stachastic Pracesses and Madels in Public Health

Operatianal Mathematics

Computatianal Bialagy

Smaathing in Biastatistical Modeling

Spatial Statistics far Health Research

Independent Study, Field Experience

RELATED OFFERINGS

Interdisciplinary Program in Molecular Epidemiology, see page 58.

MPH concentratian in quantitative methods, see page 56.

PhD in health policy, see page 33.

MASTER OF SCIENCE IN BIOSTATISTICS
(80-credit and 40-credit programs)

Biostatistics The main purpose of the 80-credit and 40-credit SM programs with a concentration in biostatistics is to prepare students for doctoral study, although a limited number of qualified students may pursue the master's degree only.

For the 80-credit program, 2.5 credits must be used to fulfill the schoolwide epidemiology requirement, and 25 credits must be earned in core courses on probability theory and applications, statistical inference, methods, and regression and analysis of variance. An additional 15 credits must be chosen from biostatistics courses, of which 10 credits must be selected from a specific list of biostatistics, health policy and management, and interdisciplinary offerings. In addition to formal course work, students acquire experience in the planning of experiments and the analysis of data by participating in a consulting seminar. Students also choose from a variety of elective courses.

The 40-credit program is designed for students who have a master's degree in one of the mathematical sciences or a doctorate in a quantitative field. Applicants must have a mathematical and statistical background sufficient to achieve a level of proficiency after one year of study comparable to that attained in the 80-credit program. As courses must be taken out of sequence to complete the program in one year, considerable background in probability and statistical inference is needed.

The requirements for this degree are essentially the same as for the 80-credit program. The 25-credit core must be completed, although students who have taken equivalent course work elsewhere may petition to substitute more advanced courses. Greater flexibility is allowed in the other requirements since only 40 total credits are required. Other courses are selected in consultation with a faculty adviser to complement and extend the student's previous training in biostatistics.

Health decision sciences The concentration in health decision sciences offers integrated educational training in decision sciences within the context of health problems. This program, which draws on courses offered by the Departments of Biostatistics and Health Policy and Management, requires 80 credits. A 40-credit program in health decision sciences is not offered.

Of the 80 credits necessary to earn the SM, 2.5 credits must be used to fulfill the schoolwide epidemiology requirement, and students must complete core courses in decision analysis for health and medical practices or for clinical research, methods, theory, management science, probability theory and applications, statistical inference, and computing; a research seminar; and a practicum. Ten additional credits must be earned from the health decision sciences core and extended core. The consulting requirement may be met by obtaining practical experience under the tutelage of a faculty member. Students also choose from a variety of elective courses.

DOCTOR OF SCIENCE IN BIOSTATISTICS

Biostatistics The doctoral concentration in biostatistics is designed for those who have demonstrated both interest and ability in scholarly research. Qualified applicants may apply directly to the doctoral program without a prior advanced degree.

Candidates must complete a minimum of two academic years of full-time study in residence at HSPH; pass the written departmental comprehensive examination and the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis.

Beyond the schoolwide requirement of introductory epidemiology, the course work for the program is built on a 30-credit core curriculum similar to that for the master's degree (see above). In addition, 25 credits of biostatistics courses are required; these courses are chosen by the student in consultation with an adviser. Students must also complete two minors (10 credits each), only one of which may be quantitative (such as theoretical statistics, biomedical computing, health decision sciences, or epidemiologic methods), whereas the other must be substantive (such as the biology of cancer or AIDS).

Doctoral students are required to participate as a teaching assistant in a course offered by the department. In order to acquire experience in the planning of experiments and the analysis of data, students must take the consulting seminar.

Health decision sciences The doctoral concentration in health decision sciences offers integrated educational training in decision analysis, cost-benefit and cost-effectiveness analysis, behavioral decision theory, operations research, applied welfare economics, statis-

tical inference, computer science, and biostatistics—all within the context of health problems. This program is coordinated with but distinct from the decision sciences concentration in the universitywide PhD Program in Health Policy, described in the Department of Health Policy and Management.

Candidates must complete a minimum of two academic years of full-time study in residence at HSPH; pass the written departmental comprehensive examination and the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis. The program requires 45 credits of course work in the major field, plus 10 credits in each of two minor fields, one of which must be biostatistics. Health policy and management is acceptable for the other minor, provided the courses focus on subject-oriented rather than quantitative material.

The course work includes the schoolwide requirement of introductory epidemiology; probability theory and applications; statistical theory; 30 credits from the health decision sciences core; and 10 credits from the extended core. The last includes courses in economic analysis, decision analysis for health and medical practices or for clinical research, methods, cost-effectiveness and cost-benefit analysis, decision theory, management, and analytical methods; a research seminar; and a practicum.

All doctoral students are required to participate as a teaching assistant in a course offered by the department. In order to acquire experience in decision analysis, students must take the consulting seminar or complete an outside project approved by the seminar director.

CONTACT INFORMATION

For more information about research and training in biostatistics, please contact Carolyn Dueck, administrator, Department of Biostatistics, 655 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1056
Fax: 617-739-1781
E-mail: dept@hsph.harvard.edu
Web: http://www.biostat.harvard.edu

For more information about research and training in health decision sciences, please contact Milton C. Weinstein, PhD, Department of Health Policy and Management, 718 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0805
E-mail: mcw@hsph.harvard.edu

For information on postdoctoral fellowships, please contact the chair of the Postdoctoral Committee, Department of Biostatistics, 655 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1056
Fax: 617-739-1781
E-mail: dept@hsph.harvard.edu

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair: Stephen W. Lagakos, MPhil, PhD. Statistical methods arising in AIDS research; clinical trials.

Rebecca A. Betensky, PhD. Sequential analysis; correlated binary data.

Marco Bonetti, MS, PhD. Analysis of clinical trial data; analysis of growth data; stochastic geometry and applications to disease spatial clustering.

Paul J. Catalano, SD. Repeated measures; multivariate models; dose-response modeling; risk assessment; environmental statistics.

Brent A. Coull, MS, PhD. Categorical data analysis; generalized linear mixed models; generalized additive models; capture-recapture methodology; methods for exact categorical inference.

Victor G. De Gruttola, SM, SM, SD. Methods for analysis of repeated measures from longitudinal studies; methods for epidemiological analysis of AIDS.

Gregory DiRienzo, MS, PhD. Statistical methods arising in AIDS research; clinical trials.

Garrett Fitzmaurice, MSc, MA, SD. Likelihood-based and nonlikelihood approaches to analyzing multivariate binary outcomes; methods for analyzing mixed discrete and continuous outcomes.

Robert C. Gentleman, MSc, PhD. Statistical computing and the analysis of censored data.

Robert J. Gray, SM, PhD. Clinical trials; survival analysis; techniques for exploratory data analysis and model building.

David P. Harrington, AM, PhD. Nonparametric methods for censored data; sequential designs for clinical trials.

Wenzheng Huang, ME, PhD. Generalized linear models and survival analysis.

Michael D. Hughes, MSc, PhD. Statistical methods in the design, analysis, and reporting of clinical trials and overviews.

Joseph G. Ibrahim, MS, PhD. Generalized linear models; Bayesian inferences.

Hongyu Jiang, PhD. Methodology for clinical trails and epidemiologic studies; multivariate survival analysis; bioinformatics.

Karen M. Kuntz, SM, SD. Cost-effectiveness analysis of cancer-screening strategies and development of disease-specific multiattribute utility scales.

Nan M. Laird, PhD. Longitudinal studies; nonresponse and missing data methods; discrete data analysis; Bayesian methods; meta-analysis.

Yi Li, MS, MS, PhD. Survival analysis; longitudinal and spatial data analysis.

Donna S. Neuberg, MA, MA. Cancer clinical trials; genetic epidemiology.

Marcello Pagano, SM, PhD. Statistical computing; clinical trials; epidemic modeling.

James M. Robins, MD. Development of analytic methods for drawing causal inferences from complex observational and randomized studies with time-varying exposures or treatments.

Andrea G. Rotnitzky, MA, PhD. Longitudinal data analysis; analysis of repeated categorical data and cluster correlated data.

Louise M. Ryan, PhD. Rodent tumorigenicity experiments; teratology experiments; clinical trials; goodness-of-fit tests; survival analysis.

Mei-Chiung Shih, MS, PhD. Statistical genetics and genetic epidemiology; clinical trials; nonlinear and nonparametric regression.

Donna L. Spiegelman, SM, SD. Binary data models with measurement error and misclassification in model covariates.

Kenneth E. Stanley, MA, PhD. Estimating mortality attributable to tobacco in the presence of incomplete information.

Marcia A. Testa, MPH, MPhil, PhD. Design, methodology, measurement, and analytical techniques for evaluation of quality-of-life indexes in therapeutic clinical trials.

Florin Vaida, PhD. Markov chain Monte Carlo; likelihood inference; nonparametric modeling; longitudinal data.

Matthew P. Wand, PhD. Nonparametric curve estimation; Markov chain Monte Carlo; computational statistics.

YouGan Wang, MS, PhD. Sequential clinical and screening trials; quasi-likelihood; estimating functions and asymptotic inference.

James H. Ware, PhD. Design and analysis of longitudinal studies; statistical aspects of environmental health research.

Lee-Jen Wei, PhD. Design and analysis of clinical trials; repeated measurements analysis; survival analysis.

Milton C. Weinstein, AM, MPP, PhD. Cost-effectiveness of health practices and technologies.

Paige L. Williams, BSPH, PhD. Cancer risk assessment and other areas of environmental statistics, especially animal carcinogenicity bioassays.

Wing Hung Wong, MS, MS, PhD. Bayesian computation; theoretical statistics; high-dimensional molecular biology and genetics.

David Wypij, ScM, MS, PhD. Longitudinal data analysis; repeated measures and growth curve models; discrete data.

Ronghui (Lily) Xu, MA, PhD. Survival analysis, particularly in relation to proportional hazards models; goodness of fit.

Marvin Zelen, AM, PhD. Theory and practice of clinical trials; methodology for early detection of disease.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

Roger B. Davis, MA. Design and analysis of clinical trials; recursive partitioning methods.

Dianne M. Finkelstein, AM, PhD. Carcinogenicity experiments; survival analysis; statistical methods for AIDS clinical trials and epidemiology.

Kimberlee Gauvreau, SM, SD. Biostatistical issues in clinical studies in the field of pediatric cardiology; institutional variability in outcomes following surgery for congenital heart disease.

Richard D. Gelber, SM, PhD. Design and analysis of clinical trials.

Rebecca S. Gelman, PhD. Clinical trials; disease screening; survival methods.

Robert J. Glynn, MA, PhD, SM, SD. Analysis of longitudinal data; nonresponse in sample surveys; epidemiology of eye diseases.

Nicholas T. Lange, MS, SD. Development and application of statistical methodology for human and animal brain mapping.

Mei-Ling Ting Lee, MS, MA, PhD. Lifetime data analysis; categorical data analysis.

Sharon-Lise T. Normand, MSc, PhD. Bayesian inference; graphical models; meta-analysis.

E. John Orav, PhD. Statistical computing and simulation; stochastic modeling; bioassay.

Bernard A. Rosner, MA, PhD. Analysis of clustered binary data; longitudinal data analysis.

David A. Schoenfeld, AM, PhD. Statistics in medical research; linear models; bioassay; survival theory.

Grace Wyshak, SM, PhD. Biostatistical and demographic methods; women's reproductive health.

ADJUNCT FACULTY

Cyrus R. Mehta, SM, PhD. Cytel Software Corporation.

DeJuran Richardson, MS, PhD. Lake Forest College.

Michael A. Stoto, PhD. Department of Epidemiology and Biostatistics, George Washington University.

Hulin Wu, MS, MS, PhD. Frontier Science and Technology Research Foundation; Statistical and Data Analysis Center, AIDS Clinical Trials Group.

THE GOAL OF THE DEPARTMENT OF CANCER CELL BIOLOGY IS TO CONDUCT AND PROMOTE RESEARCH AND TRAINING ON THE EFFECTS OF RADIATION AND ENVIRONMENTAL CHEMICALS ON THE HEALTH OF HUMAN BEINGS.

DEPARTMENT OF *cancer cell biology*

THE PROGRAM FEATURES LABORATORY RESEARCH THAT combines recent advances and techniques in biochemistry, molecular and cell biology, and genetics to focus on the mechanisms involved in the development of cancer and the means for its prevention. Specific emphases include the growth control of cancer cells; the damage and repair of DNA, particularly in response to chemicals and oxidants present in the environment; and the biological effects of low-dose radiation exposure.

The department has component divisions of radiation biology and toxicology.

Radiation biology The research and training program in radiation biology emphasizes studies at the cellular and molecular levels in an integrated approach to the investigation of the lethal, mutagenic, and carcinogenic consequences of exposure to radiation and chemical agents and the role of genetic instability in the development of cancer. Goals include not only defining the hazardous effects of such exposures but also examining the mechanisms involved in these effects. Although the research encompasses both mechanistic and applied studies utilizing in vitro systems, primarily human cells in culture, focus is placed on a molecular-level approach that includes the use of a broad range of molecular biological and recombinant DNA techniques in the study of cell-cycle control, genomic instability, signal transduction, and genetic susceptibility to cancer.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.harvard.edu/registrar/courses.

Principles of Toxicology

Introduction to Cancer Biology

Cell Response to Mutagens and Carcinogens

Biomarkers in Cancer Research

Independent Study, Field Experience

RELATED OFFERINGS

Interdisciplinary Program in Molecular Epidemiology, see page 58.

CONTACT INFORMATION

For more information about research and training in cancer cell biology, please contact Martha Cassin, Department of Cancer Cell Biology, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0054
Fax: 617-432-5236
E-mail: mcassin@hsph.harvard.edu

For application materials and information about the PhD program (program 8500), please contact the Graduate School of Arts and Sciences Admissions Office, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315
Web: http://www.gsas.harvard.edu/admissions

Applicants who have specific questions about the PhD program may contact Ruth Kenworthy, administrator, Division of Biological Sciences, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4470
Fax: 617-432-4098
E-mail: rkenwort@hsph.harvard.edu.
Web: http://www.hsph.harvard.edu/academics/dbs/bph/index.html

HADI *Danaee*

DOCTORAL STUDENT, DEPARTMENT OF CANCER CELL BIOLOGY

Hadi Danaee, a native of Iran who moved to Boston in the early 1980s, received his undergraduate degree in molecular and cell biology from the University of Connecticut in 1992. After graduation he took a job as a research assistant in the Department of Environmental Health at HSPH. While working in the physiology program, Danaee earned a master's in biology from the Harvard Extension School and took courses from the biological sciences in public health curriculum.

Danaee entered the doctoral program in cancer cell biology at HSPH in 1998. "To me, studying the whole process of how people get cancer is interesting," he says. "I like the basic biology of it—what happens to cells when they turn into tumors."

When he finishes the SD program, Danaee plans to do some postdoctoral work. After that he would like either to remain in academia or to apply what he has learned to the biomedical and scientific industry.

Toxicology The research and training program in toxicology explores the interactions of environmental chemicals with a variety of cellular and subcellular systems, the biochemical and molecular mechanisms of toxicity, and the health implications of environmental exposure. As it is often necessary to consider and analyze the relation between chemical, biological, and social factors affecting both the nature of and response to occupational or environmental exposure, the program stresses interdisciplinary approaches that join the power of modern molecular genetics and cell biology with the problem orientation of public health. Research includes such topics as biochemical and genetic responses to oxidative stress, molecular biology of the repair of DNA damage, mutagenesis in prokaryotes and eukaryotes, genetic recombination and predictive carcinogenesis, and molecular mechanisms of genetic instability in cancer and aging. The research approach is both experimental and translational, including molecular epidemiologic investigations in tumor biology.

DEGREE PROGRAMS IN CANCER CELL BIOLOGY

As described below, two degree programs are available in cancer cell biology: the doctor of philosophy (PhD), offered through the Division of Biological Sciences, and the doctor of science (SD), offered by the Department of Cancer Cell Biology. No master of science programs are currently available.

All students admitted to the PhD or SD program receive a stipend, as well as tuition and health insurance support. Students are encouraged to apply for fellowships from outside sources since certain external fellowships provide higher stipends. There is NIH traineeship support for doctoral students who are U.S. citizens or permanent residents. While funds to support international students are limited, one special scholarship is available each year for a student from a developing, sub-Saharan African country. A universitywide fellowship program also provides funding to qualified underrepresented minority students in the sciences.

DOCTOR OF PHILOSOPHY IN BIOLOGICAL SCIENCES IN PUBLIC HEALTH (Cancer Cell Biology)

Students wishing to study radiation biology or toxicology as it pertains to major problems in public health should apply to the PhD program offered by the Division of Biological Sciences through Harvard University's Graduate School of Arts and Sciences.

Graduates ordinarily assume positions as faculty members and research scientists in graduate schools, medical schools, research institutes, or schools of public health. Career opportunities in the biological sciences as they apply to public health are expected to grow both in academia and in the biotechnology and pharmaceutical industries.

Applicants to the program generally have a bachelor's degree and demonstrated competence in organic and biological chemistry, general biology, physics, and calculus. Those deficient in one of these areas may be admitted provisionally on the condition that appropriate courses will be taken before and/or after entering the program. Applicants are required to take both the GRE general and subject tests; these must be taken in time to meet the application deadline of December 14.

The PhD program is designed to offer a firm foundation in the basic biomedical sciences, as well as in epidemiology and biostatistics. Specific courses, as dictated by individual research concentrations, supplement this core. Students in the program engage in laboratory rotations in three different research areas to enable them to assess realistically their interests in a thesis project and to evaluate the suitability of the laboratory and mentor. At the completion of these rotations, students select an area of concentration and a thesis research laboratory and complete the required curriculum. A qualifying examination must be passed before engaging in thesis work, and the thesis must be defended successfully before the granting of the PhD.

DOCTOR OF SCIENCE IN CANCER CELL BIOLOGY

The SD program provides training in cancer research, emphasizing toxicology and radiobiology. The program focuses on genetic susceptibility to the effects of environmental carcinogens, as well as on a molecular epidemiologic approach to tumor biology.The program aims to develop basic skills in laboratory techniques and data handling necessary for original research. Graduates of the program pursue careers as researchers and faculty members in academic institutions and as scientists in private industry and government. Requirements for admission to the SD program are the same as for the PhD program.

The objectives of the program are satisfied through the combined experience of course work and laboratory-based investigation. General course work covers molecular biology, genetics, biochemistry, physiology, and cell biology. Students receive additional training in toxicology, radiobiology, or molecular epidemiology and also have opportunities to participate in translational collaborative research with hospitals and medical schools in the area. Laboratory-based work includes development of hypotheses, experimental design for testing these, confirmation and interpretation of results, and presentation. Each student is matched with a faculty adviser whose research interests are relevant to the thesis topic. Other resources available to students include seminars, workshops, and informal discussion groups at HSPH, Harvard Medical School, and surrounding research laboratories and hospitals.

All candidates must complete course work in the major and two minor fields, core requirements in introductory epidemiology and intermediate biostatistics, and a minimum of two academic years of full-time study in residence at HSPH. They must also pass the written departmental comprehensive examination and schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis.

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department Chair (acting): **Bruce Demple,** PhD. Repair enzymes for oxidative DNA damage; molecular biology of cellular responses to oxidative stress.

Karl T. Kelsey, MD, MOH. Occupational and environmental carcinogenesis, including molecular epidemiologic studies of the determinants of somatic genetic changes in cancer; cancer susceptibility.

Carl G. Maki, PhD. Cancer biology; radiation research; DNA repair; cell-cycle regulation.

Dieter Wolf, MD. Maintenance of normal genome copy through replication control and genetic identification of conserved components; role of proteolysis in replication control.

Zhi-Min Yuan, MD, PhD. Cancer biology; radiation research; cell-cycle regulation; signaling pathways.

SECONDARY APPOINTMENTS

(primary appointment at Harvard Medical School)

Howard L. Liber, PhD. Development and utilization of cellular and molecular methods to investigate mutagenesis in human cells, from both mechanistic and environmental perspectives.

ADJUNCT FACULTY

Peter Ofner, MRSC, PhD. Department of Pharmacology and Experimental Therapeutics, Tufts University School of Medicine.

Leona D. Samson, PhD. Department of Bioengineering and Environmental Health, MIT.

THE MISSION OF THE DEPARTMENT OF ENVIRONMENTAL HEALTH IS TO ADVANCE THE HEALTH OF ALL PEOPLE IN OCCUPATIONAL AND COMMUNITY SETTINGS IN THE UNITED STATES AND AROUND THE WORLD THROUGH RESEARCH AND TRAINING IN ENVIRONMENTAL HEALTH.

DEPARTMENT OF *environmental health*

FACULTY MEMBERS IN THE DEPARTMENT STUDY THE pathogenesis and prevention of environmentally produced illnesses and act as catalysts for scientifically based public health advances. Research approaches range from the molecular to the epidemiologic.

The Department of Environmental Health focuses on complex problems that require the contributions of many specialties. The department's faculty, research staff, and students reflect the multidisciplinary nature of the field and include chemists, engineers, epidemiologists, applied mathematicians, physicians, occupational health nurses, physiologists, cell biologists, molecular biologists, and microbiologists. Teaching and research activities of the department are carried out through five concentrations: environmental epidemiology, environmental science and engineering, occupational health, physiology, and population genetics, as well as a number of areas of interest.

ENVIRONMENTAL EPIDEMIOLOGY

Environmental epidemiology focuses on identifying and measuring the influence of environmental factors (physical, chemical, and biologic) on human disease in communities to provide scientific evidence for sound environmental and health policies. The research program integrates epidemiologic methods, physiologic assessment of health, and advanced analytic methods to assess environmental health risks. Problems being investigated include the cognitive and cardiovascular effects of lead, the effects of air pollution on respiratory and cardiovascular health, the effects of infectious agents and disinfection by-products in drinking water, and biomarkers of environmental exposure. The environmental epidemiology concentration has research and training projects under way around the globe, including western, eastern, and central Europe; Latin America; the People's Republic of China; and Pacific Rim countries.

Within the concentration a number of areas of interest are offered, including asthma, cancer, cardiovascular disease, chronic respiratory disease, heavy metals, indoor and outdoor air pollution, and radiation.

DEGREE PROGRAMS IN ENVIRONMENTAL EPIDEMIOLOGY

As described below, the environmental epidemiology concentration offers both 80-credit and 40-credit master of science (SM) programs in environmental health, as well as a program leading to the doctor of science (SD) degree.

MASTER OF SCIENCE IN ENVIRONMENTAL HEALTH (80-credit and 40-credit programs)

The master's programs in environmental epidemiology provide students with basic skills in environmental exposure assessment and epidemiologic methods, in preparation for entry into a doctoral program or for a career in public or environmental health research or policy. Recent graduates are working for public agencies, environmental advocacy groups, and environmental consulting companies.

The 80-credit SM program is designed for individuals who hold a bachelor's degree and have strong quantitative skills. The 40-credit program is open to applicants with a medical degree or a master's degree in a related scientific discipline.

Required courses for both programs include principles of biostatistics, introduction to epidemiology and elements of epidemiologic research, design and analysis of case-control and cohort studies, human physiology, environmental and occupational epidemiology, and the analysis of rates and proportions.

For the 40-credit program the remainder of courses reflect areas of interest specific to the students. Students may enroll in the 40-credit program on a part-time basis, completing it over two years. In the 80-credit program students are encouraged to participate in research seminars within the environmental epidemiology concentration and affiliated groups.

DOCTOR OF SCIENCE IN ENVIRONMENTAL HEALTH

Graduates of the SD program are prepared for careers in educational institutions, in government agencies, and as private consultants. Recent graduates are working for the U.S. Environmental Protection Agency (EPA), Health Canada, and other schools of public health. Students interested in a research career are encouraged to apply to the doctoral program in epidemiology with a minor in environmental health; candidates in this program must meet all of the requirements of the Department of Epidemiology.

Applicants to the SD program in environmental epidemiology should have a master's degree in environmental health, epidemiology, or biostatistics, as well as strong quantitative skills.

Candidates must fulfill the course requirements for a major in environmental health (20 credits) plus a minor in epidemiology (10 credits) and one other field (10 credits). In addition, they must pass a written departmental comprehensive examination; pass the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis. The thesis consists of three or more publishable papers reporting epidemiologic studies of environmental exposures.

Financial support for environmental epidemiology doctoral students may be available to U.S. citizens and permanent residents through NIH-sponsored training grants.

ENVIRONMENTAL SCIENCE AND ENGINEERING

The concentration in environmental science and engineering emphasizes the chemical, physical, microbiological, engineering, and risk-assessment aspects of environmental and occupational exposures. Faculty members measure and model ambient, indoor, and personal exposures to environmental and workplace

CONTACT INFORMATION

For more information about research and training in environmental epidemiology, please contact Douglas W. Dockery, SD, Department of Environmental Health, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0729
Fax: 617-277-2382
E-mail: ddockery@hsph.harvard.edu

SHANNON *Magari*

DOCTORAL STUDENT, DEPARTMENT OF ENVIRONMENTAL HEALTH

Since receiving her undergraduate degree in biomedical engineering from Syracuse University in 1992, Shannon Magari has been on a straight path to the field of occupational health and safety. She received a master's degree in engineering science from Dartmouth College in 1994 and an MPH from Boston University in 1996—the latter while working full-time for a biotechnology firm in Cambridge, Massachusetts.

"I think there are a lot of interesting possibilities for engineers in process health and safety," Magari notes. She joined the Department of Environmental Health at HSPH in 1997. For the last four years she has been working with boilermakers in Quincy, Massachusetts, gauging the effects of particulate emissions on their heart activity.

After receiving her SD, Magari plans to do one year of postdoctoral study, then seek a job in manufacturing. With her background Magari sees herself as a link between the industrial hygienists who measure pollutants and the doctors who diagnose workers' illnesses. "I want to identify and prevent the health hazards," she says.

contaminants; develop instruments and methods for collecting, analyzing, and assessing the effects of physical, chemical, and biological factors; and conduct risk evaluations of new products, fuels, water supplies, technologies, and remediation strategies. Collaborative teaching and research are conducted in many countries, including Mexico, Chile, China, Colombia, Greece, Russia, Argentina, Taiwan, Japan, and the Netherlands.

Students specialize in one of the following six areas of interest: environmental health management, for mid-career professionals with interests in the connections between environmental science and developing countries; environmental health sciences, for those wishing to identify and characterize human and ecological exposures to environmental contaminants; environmental science and risk management, which provides students with an integrated education in environmental science, risk analysis, and decision making; ergonomics and safety, providing a public health and engineering approach to the prevention of work-related injuries; industrial hygiene and occupational safety, which offers training in the anticipation, identification, evaluation, and control of occupational hazards; and water pollution, for those seeking in-depth training in water quality issues.

DEGREE PROGRAMS IN ENVIRONMENTAL SCIENCE AND ENGINEERING

As described below, the environmental science and engineering concentration offers both 80-credit and 40-credit master of science (SM) programs in environmental health, as well as a program leading to the doctor of science (SD) degree.

Students take core courses in human physiology, analytical chemistry and exposure assessment, air pollution, environmental and occupational epidemiology, risk assessment, regulatory toxicology, introductory statistical methods, and introductory epidemiology. Advanced courses in environmental science are oriented toward a specific pollutant or medium (such as air, surface water, or groundwater). They may focus on monitoring, modeling, or the control of the pollutants; or they may emphasize resources and occupational management, regulation, and policy.

In addition to the general core requirements, areas of interest have specific course requirements. Students in the environmental science and risk management area are expected to complete a practicum.

Many students also take courses at MIT and at other Harvard schools, including the Kennedy School of Government and the Faculty of Arts and Sciences.

MASTER OF SCIENCE IN ENVIRONMENTAL HEALTH (80-credit and 40-credit programs)

Graduates of the program assume positions in government, in private companies, or in research institutions. In the past few years some graduates have gone to work as industrial hygienists with biotech firms, consulting companies, and the military. Some are working for nonprofit community and international organizations, while others have gone on to pursue doctoral programs. In the environmental science and risk management area, graduates may pursue careers utilizing decision analysis skills in program design, management, and policy.

Candidates are evaluated on the basis of academic performance, work experience, letters of recommendation, and standardized test scores. Applicants' personal statements should clearly state their preferred area of interest and the ways that the program will further their careers.

Applicants to the 80-credit program generally have undergraduate degrees and limited work experience. Consistent with the interdisciplinary nature of the concentration, a broad range of undergraduate or graduate degrees are acceptable. Among these are environmental science, physics, mathematics, biology, chemistry, engineering, geology, meteorology, and decision analysis. Occasionally applicants with social science, business, or policy backgrounds are successful if they can demonstrate some academic background in math, chemistry, and biology. At times applicants are accepted conditional upon completing science and/or math courses.

Applicants with exceptional credentials (including postbaccalaureate degrees and professional experience) may request consideration for admission to a 40-credit SM program in the areas of environmental health sciences or industrial hygiene and occupational safety.

DOCTOR OF SCIENCE IN ENVIRONMENTAL HEALTH

Doctoral graduates are qualified for research and teaching positions in schools of public health and other academic institutions, in local and federal agencies, and in the private sector. Recent graduates have taken positions as junior faculty members; as research scientists with the EPA, the National Institute for Occupational Safety and Health (NIOSH), and Health Canada; and as staff scientists with the National Research Council, the Mexican Ministry of Health, and consulting organizations.

Applicants to the doctoral program normally have a master's degree in environmental science or a related field and strong scientific and quantitative skills. Those applying to study in environmental science and risk management and in industrial hygiene and occupational safety usually have several years of relevant work experience in addition to a master's degree.

Students undertake a comprehensive program in their specialty area and must fulfill course requirements for one major (20 credits) and two minor (10 credits each) fields. Admission into the doctoral program in all areas of interest depends upon demonstrated competence in the requirements for an SM program described above. Doctoral candidates must pass the departmental written examination and the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; complete, defend, and submit a thesis; and serve as a teaching assistant for the equivalent of three 5-credit courses. During the course of their program, most doctoral students also take advantage of opportunities to present papers at scientific conferences.

Depending on the specialty area, doctoral students may be funded either fully or partially through research fellowships or training grant fellowships. NIH traineeships are restricted to support for doctoral students who are U.S. citizens or permanent residents. For students specializing in industrial hygiene and occupational safety, tuition support may be available through a NIOSH Education and Research Center Grant for highly qualified U.S. citizens or permanent residents. Students may also apply for a fellowship offered directly by the Oak Ridge Institute for Science and Education of the Department of Energy; please consult http://www.orau.gov/orise/edu/01Catalog Edu.pdf.

OCCUPATIONAL HEALTH This concentration is designed to train occupational safety and health professionals to recognize and prevent occupational injuries and disease. Faculty members carry out research spanning a wide range of occupational health problems, with the broad objective of identifying and

CONTACT INFORMATION

For more information about research and training in environmental science and engineering, please contact the Department of Environmental Health, 665 Huntington Avenue, Boston, MA 02115.

Applicants to the doctoral program are strongly encouraged to arrange an interview with faculty members. Please contact Linda A. Fox, administrator, Environmental Science and Engineering Program, at the address above.
Phone: 617-432-4850
E-mail: lfox@hsph.harvard.edu

RELATED OFFERINGS

Environmental/occupational epidemiology area of interest, Department of Epidemiology, see page 22.

MPH concentrations in occupational and environmental health and in quantitative methods, see pages 55–56.

CONTACT INFORMATION

For more information about the occupational health concentration, MOH program, and training in occupational epidemiology, please contact David C. Christiani, MD, SM, MPH, Department of Environmental Health, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1260
Fax: 617-432-0219
E-mail: dchris@hohp.harvard.edu
Web: http://www.hsph.harvard.edu/erc

For more information about the Occupational and Environmental Medicine Residency, please contact Howard Hu, MD, SM, SD, Department of Environmental Health, 655 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-2790
Fax: 617-432-0219
E-mail: rehhu@gauss.bwh.harvard.edu
Web: http://www.hsph.harvard.edu/erc

contributing to the reduction or elimination of job-related health hazards. Research topics include respiratory disease among exposed populations (including construction, auto, textile, and agricultural workers, workers exposed to fuel-oil ash, and building occupants); reproductive and chronic disease studies of populations exposed to petrochemicals and heavy metals; biological and chemical hazards assessment; epidemiology of acute injury and cumulative trauma disorders; occupational and environmental cancers such as lung, skin, and bladder cancer; biomonitoring and medical surveillance; worker training; and occupational health research and training in developing countries. Faculty members have been in the forefront of the development of biochemical and molecular markers and their applications in epidemiologic studies of exposed populations. Areas of interest include environmental molecular epidemiology and occupational epidemiology.

DEGREE PROGRAMS IN OCCUPATIONAL HEALTH

The training programs in occupational health are offered through the NIOSH-sponsored Harvard Education and Research Center for Occupational Safety and Health. As described below, the following programs are offered: master of occupational health (MOH); master of science (SM) in primary health care nursing (from Simmons College) and dual-degree SM in environmental health and primary health care nursing (from HSPH, in cooperation with Simmons College); SM in environmental health with a focus on occupational safety and health; and doctor of science (SD) or doctor of public health (DPH).

MASTER OF OCCUPATIONAL HEALTH (40-credit program)

This program is designed to train physicians in the public health disciplines relevant to the prevention and control of occupational disease and injury. Physicians interested in occupational and environmental medicine may apply either to the MOH program or to the occupational and environmental health concentration of the master of public health (MPH) program. Either the MOH or the MPH is taken as the first year of a two-year Occupational and Environmental Medicine Residency (see page 17).

For the MOH (or the MPH) program students take core courses on the principles of biostatistics, epidemiology, and toxicology; ergonomics and human factors; occupational safety; occupational health policy and administration; the work environment; society and health; occupational and environmental medicine; environmental and occupational epidemiology; and the practice of occupational health. Recommended electives cover the analysis of rates and proportions, regression and analysis of variance in experimental research, and the ethical basis of the practice of public health.

MASTER OF SCIENCE IN ENVIRONMENTAL HEALTH (80-credit and 40-credit programs)

The occupational health concentration emphasizes the epidemiologic and biostatistical aspects of this field. The SM is normally an 80-credit program, although an individual with a PhD or JD may be admitted to a 40-credit program. It is generally expected that students without a prior doctoral degree will wish to enroll in a subsequent doctoral program.

This program has broad applicability and provides training appropriate for those who wish to work in local, state, or federal government departments or agencies; in research or teaching environments; in environmental management firms; and as private consultants.

Applicants normally have a bachelor's degree and advanced training in science, including college-level organic and inorganic chemistry. Those currently holding positions in the field of occupational safety and health and planning to return to these positions are considered particularly strong candidates for admission.

MASTER OF SCIENCE IN PRIMARY HEALTH CARE NURSING (40-credit program)

This program is offered by the Harvard Education and Research Center and Simmons College, which awards the degree. The program is designed for registered nurses seeking preparation as occupational health nurse practitioners.

Applicants must have at least a bachelor's degree in nursing from a program accredited by the National League of Nursing, must show satisfactory completion of basic statistics and physical assessment courses, and must be registered to practice nursing in a U.S. state or territory.

Participants undertake practica in industrial settings, clinics, and hospital-based occupational health programs and complete a course at HSPH in occupational health policy and administration and courses at Simmons College in normal and abnormal human physiology, research methods, the theory and practice of pri-

mary health care nursing, the theoretical foundations for nursing practice, clinical pharmacology for nurses in ambulatory care, health in the workplace, health care systems, and health promotion.

MASTER OF SCIENCE IN ENVIRONMENTAL HEALTH (HSPH) AND PRIMARY HEALTH CARE NURSING (SIMMONS COLLEGE)
(dual-degree, 80-credit program)

This dual-degree program emphasizes identification of health hazards, workplace assessment, program planning and intervention, worker health promotion, and disease and injury prevention. The program integrates curricula from HSPH and Simmons College, with courses taken concurrently at these institutions.

The program focusing on occupational health nursing is also aimed at preparing nurses for positions as occupational health nurse practitioners. Practice locations include workplaces/corporations, clinics (including occupational and environmental medicine facilities), and hospitals.

Applicants must have at least a bachelor's degree in nursing from a program accredited by the National League of Nursing, must show satisfactory completion of a basic statistics course, and must be registered to practice nursing in a U.S. state or territory. Nurses interested in this program must apply to, be accepted by, and maintain satisfactory academic progress in both schools.

Students in the dual-degree program fulfill essentially the same course requirements as those enrolled in the 40-credit program. In addition, they must take courses covering ergonomics and human factors, the work environment, occupational safety, the principles of biostatistics and epidemiology, and environmental and occupational epidemiology; a tutorial in toxicology; and two electives. Students must also complete an independent study project.

DOCTOR OF SCIENCE IN ENVIRONMENTAL HEALTH/DOCTOR OF PUBLIC HEALTH

The SD or DPH degree may be earned by students who wish to concentrate in occupational health. Applicants to the DPH program must hold an MPH degree. Students fulfill course requirements in one major (20 credits) and two minor fields (10 credits each). In addition, they must pass a written departmental comprehensive examination; pass the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis.

Some financial support may be available for doctoral students who are U.S. citizens or permanent residents through National Research Service Awards, NIOSH or other traineeships, or scholarships.

OCCUPATIONAL AND ENVIRONMENTAL MEDICINE RESIDENCY

This residency emphasizes the development of skills in clinical occupational and environmental medicine and epidemiology. During this year acquired knowledge and abilities are applied to patient management and workplace community problem solving; at least one short-term research project is designed, executed, and documented under faculty supervision. Field experience includes rotations through hospital- and community-based occupational and environmental health clinics. Additional rotation choices are available in corporate medical departments and governmental agencies. The residency is fully accredited by the Accreditation Council for Graduate Medical Education.

Applicants must be graduates of an approved school of medicine and must have completed at least one year of internship training in a U.S. or Canadian clinical residency; board eligibility or certification in a primary care specialty is preferred. Physicians currently holding positions in the field of occupational safety and health who plan to return to these positions are considered strong candidates for admission.

In addition to submitting an application to the degree program, prospective residents should send a letter of interest to the Occupational Health Program, enclosing a curriculum vitae listing medical training and experience, research experience, and publications. Admission to the practicum year of the residency is a separate process from, and usually occurs shortly after, admission to the degree program. Applicants who require early notification of admission to the residency program should send a cover letter to this effect with their application. Applicants to the MOH program and the MPH program with a concentration in occupational and environmental health who are also applying to the Occupational and Environmental Medicine Residency program must apply by September 1, 2001, for 2002–03 matriculation. Continuation into the second year of the residency is contingent upon having had adequate prior clinical experience and exemplary performance in the didactic phase of the program.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Introduction to Environmentol Heolth

Principles of Environmental Heolth

Humon Physiology

Environmentol ond Occupotionol Epidemiology

Environmentol ond Sociol Risk Factors for Psychiatric Disorders

Advonced Respirotory Physiology

Advonced Topics in Physiology

Advonced Regression Techniques for Environmental Epidemiology

Occupotionol Heolth Policy ond Administrotion

Introduction to Occupotionol ond Environmentol Medicine

Epidemiologic Bosis of Occupotionol Heolth Stondords

Occupationol Sofety ond Injury Prevention

Ergonomics ond Humon Factors

Protecting Workers and Communities from Hozordous Substonces

Ventilotion ond Indoor Air Quolity

Evoluotion ond Control of Noise ond Vibration

Introduction to Aerobiology

Woter Pollution

Properties of Environmentol Contominonts

Introduction to the Work Environment

Anolyticol Methodology ond Exposure Assessment

Woter Environment

Lond Environment ond Waste Management

Industriol Hygiene/Ergonomics Internship ond Environmentol Sciences Reseorch Seminor

Respirotory Epidemiology

Exposure Assessment for Environmentol ond Occupational Epidemiology

Strategies for Environmental Risk Management

Madern Genetic Epidemialagy and Gene-Mapping

Human Health and Global Enviranmental Change

Radiatian Environment: Its Identificatian, Evaluatian, and Cantral

Air Pallution: Praperties af Particles and Gases

Air Pallutian: Atmospheric Pracesses, Modeling, and Energy

Risk Assessment

Regulatary Taxicalagy

Enviranmental Science and Risk Management

Praperties af Enviranmental Cantaminants and Transplant Media

Enviranmental Science and Risk Management Practicum

Industriol Ecalagy and Life-Cycle Assessment

Advanced Seminar in Aerabialagy

Independent Research, Field Experience

Some financial support for residency candidates who are U.S. citizens or permanent residents may be available through traineeships or National Research Service Awards.

PHYSIOLOGY The concentration in physiology focuses on normal and pathological functions of organisms. It centers on the respiratory system because the system presents an immense, thin surface area to the environment and is thus an important route of entry to the hody as well as a site of damage from toxins and infections. Topics of study include mediators and adhesion molecules involved in inflammation; the effects of inhaled particles; lung infections; biomechanics of cells and tissue in normal and inflamed lungs; smooth muscle function in asthma; control of breathing; sleep-related breathing disorders; mechanisms of dyspnea and respiratory sensations; cardiovascular pathobiology; and epithelial cell, macrophage, lymphocyte, and neutrophil lung biology. The hiology is broadly based, ranging from molecular and cell biology to integrated organismic, environmental, and comparative physiology.

The physiology concentration integrates a range of scientific disciplines, including physics, bioengineering, physiology, biomathematics, cell biology, molecular biology, clinical science, and epidemiology. By working within this rich interdisciplinary environment, students learn many measurement technologies, discover a variety of disciplinary approaches, and develop mature scientific thinking. Special facilities are available, including a confocal microscope, analytical electron microscopes, a flow cytometer, a sleep laboratory, and a sensation laboratory.

DEGREE PROGRAMS IN PHYSIOLOGY

As described below, the concentration in physiology leads either to the doctor of philosophy (PhD) degree, offered through the Division of Biological Sciences, or the doctor of science (SD) degree, offered through the Department of Environmental Health. Areas of interest in both programs include cell and molecular biology of the lungs, pathogenesis of lung disease, respiratory physiology, bioengineering, and infectious diseases.

Applicants to the PhD or SD programs generally have a bachelor's degree and demonstrated competence in organic and biological chemistry, general biology, physics, and calculus. Those deficient in one of these areas may be admitted provisionally on the condition that appropriate courses will be taken hefore and/or after entering the program. Applicants must take both the GRE general and suhject tests by October in order to meet the PhD application deadline of Decemher 14.

Most students admitted to the PhD and SD programs receive a stipend, as well as tuition and health insurance support. Students are encouraged to apply for fellowships from outside sources since certain external fellowships provide higher stipends. While funds to support international students are limited, one special scholarship is available each year for a doctoral student from a developing, sub-Saharan African country. A universitywide fellowship program also provides funding to qualified underrepresented minority PhD students in the sciences.

DOCTOR OF PHILOSOPHY IN BIOLOGICAL SCIENCES IN PUBLIC HEALTH (Physiology)

Students wishing to study cellular and molecular hiology or physiology as it pertains to major problems in public health may apply to the PhD program offered by the Division of Biological Sciences through Harvard University's Graduate School of Arts and Sciences.

The program is designed to prepare students for research careers in respiratory physiology, cell and molecular biology, or bioengineering. It offers a firm foundation in the basic biomedical sciences, as well as in epidemiology and biostatistics. Graduates ordinarily assume positions as faculty members and research scientists at medical schools, research institutes, and schools of public health. Career opportunities in the biological sciences as they apply to public health are expected to grow both in academia and in the biotechnology and pharmaceutical industries.

Specific courses, as dictated by individual research concentrations, supplement this core. Students in this program engage in laboratory rotations in three different research areas to enable them to assess realistically their interests in a thesis project and to evaluate the suitability of the laboratory and the mentor. At the completion of these rotations, students select an area of concentration and a thesis research laboratory and complete the required curriculum. A qualifying examination must be passed before engaging in thesis work, and the thesis must be defended before the granting of the PhD.

DOCTOR OF SCIENCE IN ENVIRONMENTAL HEALTH

Students wishing to study cellular, integrative, or engineering approaches as they pertain to problems in the

environment, physiology, or public health may apply directly to the SD program in the Department of Environmental Health.

Like the PhD program the SD program is designed to prepare students for research careers in respiratory physiology, cell and molecular biology, or bioengineering. The program offers a firm foundation in the basic biomedical sciences, as well as in epidemiology and biostatistics, and provides the opportunity for students to engage in laboratory rotations.

Students in the SD program must pass the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis based on intensive research under the guidance of a faculty adviser in the student's area of concentration.

POPULATION GENETICS The aim of the population genetics concentration is to consider the effects of genes, environmental risk factors, and the interaction of the two in the process for genetically complex diseases such as asthma, COPD, osteoporosis, diabetes, hypertension, drug addiction, and coronary heart disease.

Population genetics is a multidisciplinary field, combining various aspects of genetics, epidemiology, statistics, biology, medicine, and computer science; those who work in this field have equally diverse backgrounds. The concentration is intended to provide candidates with ample training in all critical areas needed to carry on independent research, including gene-mapping to identify the loci and variants responsible for the genetic contribution to complex diseases, gene assessment to investigate the role of a particular (candidate) gene in disease pathogenesis, analysis of gene-environmental interactions to explore the relative contributions of genetic and environmental factors in disease, and mutation detection and allele frequency distribution to assess the distribution of disease-predisposing factors in the population at large.

The Program for Population Genetics (PPG) is presently engaged in several large-scale studies of common, genetically complex, human diseases. In addition, PPG investigators collaborate closely on related studies with the Occupational Health Program; Environmental Epidemiology Program; other programs in the Departments of Environmental Health, Epidemiology, and Biostatistics; and Channing Laboratory at Brigham and Women's Hospital.

DEGREE PROGRAMS IN POPULATION GENETICS

As described below, the concentration offers a doctor of science (SD) program. No master's degree programs are currently available.

DOCTOR OF SCIENCE IN ENVIRONMENTAL HEALTH

While the program aims to prepare every student for an academic career in research and teaching, graduates are well prepared for a variety of potential career paths. Opportunities for research careers in the private sector (for example, biotech and genetics/genomics companies) have increased exponentially in recent years. Graduates have also found themselves to be highly sought by management consulting firms and other organizations requiring strong technical backgrounds and problem-solving skills.

Applicants to the SD program are required to have an undergraduate degree in any area of the natural sciences, and some research experience is desirable. Students from any branch of the life sciences are the most logical candidates, but the statistical foundations of population genetics make applicants with degrees in mathematics, physics, or chemistry highly competitive. Some familiarity with basic concepts of biology and genetics is recommended; but the necessary fundamentals of biology, genetics, biochemistry, epidemiology, and medicine can be acquired through course work following acceptance. Highly motivated applicants from nonscientific fields may be accepted in exceptional circumstances.

In addition to the schoolwide requirements, doctoral students are required to take 30 credits emphasizing population genetics, including introductory epidemiology, elements of epidemiologic research, the design and analysis of case-control and cohort studies, the molecular epidemiology of cancer, studies in molecular epidemiology, human physiology, environmental and occupational epidemiology, exposure assessment for environmental and occupational epidemiology, modern genetic epidemiology and gene-mapping, the genetic basis of human disease, and molecular biology for epidemiologists. Students take an additional 10 credits from a list of electives.

Some financial support for doctoral students may be available to U.S citizens and permanent residents.

CONTACT INFORMATION

For more information about research and training in physiology, please contact Jeffrey J. Fredberg, SMME, ME, PhD, Department of Environmental Health, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0198
Fax: 617-432-3468
E-mail: jfredber@hsph.harvard.edu

For application materials and information about admission to the PhD program (program 8500), please contact the Graduate School of Arts and Sciences Admissions Office, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315
Web: http://www.gsas.harvard.edu/admissions

Applicants who have specific questions about the PhD program may also contact Ruth Kenworthy, administrator, Division of Biological Sciences, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-2932
Fax: 617-432-0433
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Web: http://www.hsph.harvard.edu/Academics/dbs/bph/index.html

For more information about research and training in population genetics, please contact Xiping Xu, MD, PhD, SM, Department of Environmental Health, Program for Population Genetics, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-2959
Fax: 617-432-2956
E-mail: xu@hsph.harvard.edu

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair: Joseph D. Brain, SM, SM, SD. Function and structure of pulmonary macrophages; deposition and clearance of inhaled particles and responses to them; respiratory infection.

Deborah H. Bennett, MS, PhD. Fate and transport of persistent organic chemicals in a multimedia environment as related to environmental risk analysis.

Harriet A. Burge, MA, PhD. Aerobiology; bioaerosols in indoor air; fungus allergen ecology, characterization, prevalence, and health effects.

James P. Butler, AM, PhD. Lung structure and function; parenchymal micromechanics; magnetic twisting cytometry; nemoendocrinology; avian physiology.

David C. Christiani, MD, SM, MPH. Occupational diseases; biomarkers and molecular epidemiology.

Jack T. Dennerlein, SM, PhD. Work-related chronic musculoskeletal disorders; design of human-machine interfaces.

Douglas W. Dockery, SM, SM, SD. Epidemiologic studies of respiratory health effects of air pollution; environmental exposures and lifetime development of respiratory disease.

John S. Evans, SM, SM, SD. Assessment of human exposures to pollutants; evaluation of uncertainty; application of decision analysis; assessment of health risk from waste disposal and energy production.

Timothy E. Ford, PhD. Surface, source, and drinking-water microbiology; microbial cycling/transformation of pollutants; microbiologically influenced corrosion.

Jeffrey J. Fredberg, SMME, ME, PhD. Identification of the mechanical basis of airway and lung parenchymal function at the levels of organ, tissue, cell, and protein.

Beatriz S. González-Flecha, MS, PhD. Biochemistry of oxygen free radicals; oxidative stress in biological systems; mechanisms of oxidative damage in eukaryotic and prokaryotic cells.

Joseph J. Harrington, AM, PhD. Water resources planning and quality management; environmental monitoring and control systems; applied statistics for modeling; management for tropical disease control.

Russ B. Hauser, MD, MPH, SD. Occupational lung diseases; environmental agents and allergic airways disease; male reproductive epidemiology.

Robert F. Herrick, MS, SD. Exposure-reactive aerosols; characterization of complex exposures; interaction of individuals with a source of exposure.

Howard Hu, MD, MPH, SM, SD. Epidemiology of chronic lead toxicity using biomarkers of bone lead accumulation and genetic susceptibility.

Karl T. Kelsey, MD, MOH. Occupational and environmental carcinogenesis, with emphasis on the study of workplace mutagen and carcinogen exposure.

Petros Koutrakis, MS, PhD. Sampling and analysis of air pollutants; atmospheric, indoor air, and aerosol chemistry; application of multivariate techniques to source apportionment; acid rain; urban air pollution.

Jonathan I. Levy, SD. Health impacts of air pollution; public health benefits of energy conservation; methods for assessing environmental risks in developing countries.

Donald K. Milton, MD, MPH, DPH. Measurement of airborne endotoxin; epidemiology of acute and chronic responses to bioaerosol exposure.

Joseph P. Mizgerd, SD. Physiology of inflammation, particularly the molecular mechanisms regulating the emigration of neutrophils.

Richard R. Monson, MD, SM, SD. Relationship between the workplace, the environment, and disease.

Stephen N. Rudnick, MS, SM, SD. Engineering control of particulate air contaminants in indoor and occupational settings and engineering control systems; sampling and analysis of air contaminants.

Joel D. Schwartz, PhD. Environmental epidemiology; natural history of lung function and disease; cost-benefit analysis; nonclassical time series analysis; nonparametric smoothing and graphical methods.

Jacob Shapiro, SM, PhD. Occupational and environmental radiation protection; low-level radioactive waste disposal; radiation dosimetry and protection standards; environmental radiation surveillance.

James P. Shine, PhD. Distribution, fate, and effects of contaminants in aquatic ecosystems; influence of environmental variables on routes of exposure to toxic substances.

Stephanie A. Shore, PhD. Airway physiology and pharmacology; role of neuropeptides in the pathogenesis of airway disease.

Thomas J. Smith, MPH, MS, PhD. Evaluation of exposure-response relationships through occupational epidemiologic studies; application of pharmacokinetic modeling to exposure-tissue dose relationships.

Stover H. Snook, AM, PhD. Low-back pain; manual materials handling; heat stress; fatigue; stairway design; personal protective equipment; cumulative trauma disorders.

Frank E. Speizer, MD. Environmental epidemiology; pulmonary diseases; cancer and nutrition; health effects of air pollution; occupational and environmental medicine.

John D. Spengler, PhD, SM. Assessment of human exposures to environmental contaminants; use of advanced particle analysis techniques to identify source contributions to indoor and ambient aerosols.

Helen H. Suh, SM, SD. Multimedia exposure assessment; exposure modeling; ambient and indoor air pollution; study design.

Ning Wang, MS, SD. Cytoskeletal mechanics; mechanochemical signal transduction; cell adhesion and migration; cancer metastasis; effects of mechanical forces on cells.

Xiping Xu, MD, PhD, SM. Environmental, occupational, and genetic epidemiology of respiratory, cardiovascular, and metabolic diseases.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

Robert B. Banzett, PhD. Respiratory neurophysiology and mechanics; perceived sensation; control; interaction with locomotion; fluid dynamics in the avian lung.

Jeffrey M. Drazen, MD. Pulmonary and respiratory pharmacology; mediators of immediate hypersensitivity; mucus regulation and expression in chronic bronchitis.

John J. Godleski, MD. Experimental models of normal and pathologic responses to inhaled particles.

Diane R. Gold, MD, DTM&H, MPH. Acute lower respiratory illness in childhood as a predictor of lung function and chronic respiratory symptoms; air pollution and childhood respiratory morbidity.

Rose H. Goldman, MD, MPH, SM. Occupational health in the biotechnology industry; metal poisoning; neurotoxicity; cumulative trauma injuries.

Stefanos N. Kales, MD, MPH. Occupational and environmental lung disease; occupational/ environmental toxicology.

Jeffrey N. Katz, SM, MD. Clinical policy relating to noninflammatory musculoskeletal conditions; health policy questions; back pain and upper extremity disorders.

Lester Kobzik, MD. Lung macrophage phagocytosis and response to inhaled particles; pulmonary inflammation and pathology.

Stephen H. Loring, BMS, MD. Chest wall mechanics, hyperinflation, and lung transplantation; mechanics and physiology of respiratory muscles and the pleural space.

Edward A. Nardell, MD. Airborne transmission and infection control of *M. tuberculosis*; air disinfection with ultraviolet irradiation; epidemiology and programmatic control of TB.

George P. Topulos, MD. Pulmonary micromechanics and pulmonary circulation.

Richard Verrier, PhD. Neural triggers of sudden cardiac death; cardiac electrophysiology; T-wave alternans; coronary hemodynamic function; novel delivery systems for anti-arrhythmic therapy.

Scott T. Weiss, MD, SM. Natural history of chronic lung disease; epidemiology of asthma and hypertension; cardiovascular, occupational, environmental, and genetic epidemiology.

ADJUNCT FACULTY

Ellen A. Eisen, SM, SM, SD. University of Massachusetts, Lowell.

Alan Eschenroeder, BME, PhD. Consultant.

Nancy C. Long Sieber, PhD. Division of Science and Mathematics, Boston University College of General Studies.

Robert B. Pojasek, PhD. Cambridge Environmental, Inc.

David H. Wegman, MD, SM. Department of Work Environment, University of Massachusetts, Lowell.

Yukio Yanagisawa, MEng, DEng. Tokyo University; Research Institute for Innovative Technology on Earth.

EPIDEMIOLOGY—THE STUDY OF THE FREQUENCY, DISTRIBUTION, AND DETERMINANTS OF DISEASE IN HUMANS—IS ONE OF THE FUNDAMENTAL SCIENCES OF PUBLIC HEALTH. WHILE INDIVIDUAL EPIDEMIOLOGISTS HAVE DIFFERENT STUDY OBJECTIVES AND USE MANY APPROACHES, THE AIMS OF EPIDEMIOLOGIC RESEARCH ULTIMATELY LIE IN THE PREVENTION OR EFFECTIVE CONTROL OF HUMAN DISEASE.

DEPARTMENT OF *epidemiology*

THE DEPARTMENT OF EPIDEMIOLOGY HAS A LONG TRADITION of teaching and research in the epidemiology of cancer, cardiovascular disease, and other chronic diseases, as well as in epidemiologic methodology. Current research in the department includes the role of viruses in the etiology of cancer; the connection between diet and risk of cancer, cardiovascular disease, and other major chronic diseases; the relationship between exposure to chemicals in the workplace and the development of cancer; the epidemiology of infectious disease; factors in early life predisposing individuals to chronic diseases; case identification and risk factors in mental disorders; health effects of drugs, vaccines, and medical devices; and causes of human infertility.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Principles of Epidemiology
Introduction to Epidemiology
Elements of Epidemiologic Research
Analysis of Case-Control and Cohort Studies
Practice of Epidemiology
Advanced Epidemiologic Methods
Introduction to Clinical Epidemiology
Epidemiology of Cardiovascular Disease
Epidemiology of Cancer
Epidemiologic Analysis of Outbreaks and Infectious Diseases
Epidemiology in Public Health Practice
Epidemiology of Adult Psychiatric Disorders
Environmental and Social Risk Factors for Psychiatric Disorders
Assessment Concepts and Methods in Psychiatric Epidemiology
Psychiatric Diagnosis in Clinic and Community Populations
Pharmacoepidemiology
Cancer Prevention
Epidemiology of Infectious Diseases
Principles of Screening
Oral Epidemiology
Ophthalmic Epidemiology
Research Synthesis and Meta-Analysis Applications in Public Health and Clinical Medicine
Health Services Epidemiology
Analytical Aspects of Clinical Epidemiology
Use of Biomarkers in Epidemiologic Research
Design Issues Involved in Measuring Health Status
Seminar on Applied Research into Clinical Effectiveness
Genetic Epidemiologic Methods for Psychiatric and Other Complex Disorders

DEGREE PROGRAMS IN EPIDEMIOLOGY

As described below, the department offers both 80-credit and 40-credit master of science (SM) programs, as well as a doctor of science (SD) and doctor of public health (DPH) program.

Students in all degree programs choose from among fourteen areas of interest:

Cancer epidemiology In addition to research methodology, the curriculum in this area includes courses on the biology and genetics of cancer; the basic concepts and issues of cancer epidemiology; the roles of diet, oncogenic viruses, and occupational exposures in the etiology of cancer; the integration of biomarkers into research; the prevention of cancer; and research methods. Research opportunities for students include a large number of ongoing cohort and case-control studies within the department and in conjunction with the Dana-Farber/ Harvard Comprehensive Cancer Center.

Cancer prevention This area provides students with knowledge of the science of cancer prevention, expertise in a specialized research area, skill in policy analysis, and an introduction to professional networks. Social and behavioral scientists prepare to advance alternative strategies for inducing behavioral change at the individual, institutional, community, or policy levels. Physicians prepare for careers as clinical investigators or public health practitioners specializing in cancer prevention. The program combines the interdisciplinary resources of the Harvard Center for Cancer Prevention and of the Division of Cancer Epidemiology and Control in the Dana-Farber Cancer Institute.

Cardiovascular epidemiology This area provides training in research methodology and the epidemiology of cardiovascular diseases. Doctoral students conduct research in a substantive or methodological area related to cardiovascular epidemiology.

Clinical epidemiology This area is designed primarily for clinicians and other health care professionals who wish to develop the quantitative and analytic skills needed for clinical research. Students take core courses in epidemiology and biostatistics to develop basic skills in study design and analysis that will allow them to examine clinical questions related to the diagnosis and treatment of disease. Additional courses in epidemiology and courses offered by other departments address related topics such as health status and quality-of-life measurement, decision analysis, cost-effectiveness analysis, health services research, and quality improvement of health care.

While the appropriate content for this area may be covered by taking courses offered during the regular academic year (fall and spring semesters), requirements for the 40-credit master of science (SM) degree in epidemiology may also be partially fulfilled by taking the summer courses offered through the Summer Program in Clinical Effectiveness. Students begin their program by taking a core set of clinical effectiveness courses during an initial summer period. They complete the SM program by taking advanced courses during the regular academic year and, if desired, during a second summer period. Alternatively clinical effectiveness students who only take courses during two summer periods can satisfy the requirements for the SM degree by completing a supervised research project. The content of this project typically entails the design and implementation of a clinical study, the analysis of the resulting data, and the creation of a manuscript of quality suitable for publication. An outline for this project must be submitted at time of application.

Environmental/occupational epidemiology This area is closely associated with the concentrations in environmental epidemiology and occupational health in the Department of Environmental Health. Students take courses in epidemiology, environmental health, occupational health, biostatistics, and toxicology. Doctoral students conduct research in a substantive or methodologic area related to environmental or occupational health.

Epidemiologic methods This area provides training in the development and application of new methods in epidemiologic research. Students learn to use and justify classical epidemiologic methods in study design, data analysis, and interpretation of results. Students also receive training in biostatistical areas most relevant to epidemiologic research. Recent innovations in epidemiologic methodology are introduced through advanced courses and tutorials. Doctoral students conduct research with faculty members in the development of new methodologies and in novel applications of existing methodologies. Those enrolling in this area of interest ordinarily have completed four semesters of college calculus and one semester of linear algebra.

Epidemiology of aging This area is geared toward those interested in the diseases and conditions, as well as research methods, specific to older populations. Social and cultural aspects of health in older persons are also covered. A range of relevant courses are offered, and students can take advantage of research opportunities in association with the Department of Nutrition, Channing Laboratory, Division of Preventive Medicine at Brigham and Women's Hospital, and the Hebrew Rehabilitation Center for the Aged.

Infectious diseases This area is designed to familiarize students with the epidemiology and biology necessary to understand the interactions of infectious agents, their hosts, and their vectors. Social and cultural aspects of infectious diseases and of related health services are covered, as are new and resurgent infectious diseases. Students in this area take courses in the Departments of Epidemiology, Immunology and Infectious Diseases, and Population and International Health. More advanced topics of infectious disease epidemiology are covered in tutorials with faculty members focusing on this area.

Molecular/genetic epidemiology This area introduces students to the application of molecular and genetic methods in epidemiology. These methods may be useful as measures of exposure, disease susceptibility, or disease outcome. Training encompasses family-based association methods, gene-mapping to identify the chromosomal localization of genes associated with disease, and fine mapping and identification of these genes. Population-based studies correlate variation in genes with disease risk and prognosis and assess gene-environment interactions. Relevant courses explore the genetic epidemiology of complex diseases, including cancer, cardiovascular disease, diabetes, psychiatric illnesses, Alzheimer's disease, and asthma, as well as individual variation in drug response (pharmacogenomics). Students can collaborate with the Department of Environmental Health (including the Program for Population Genetics), the Channing Laboratory, Dana-Farber Cancer Center, and other research groups.

Nutritional epidemiology Through courses in the Departments of Epidemiology and Nutrition, students in this area learn methods of nutritional assessment and their related strengths and weaknesses. Students also receive advanced training in the nutritional determinants of disease and in methods for analysis specific to research in nutritional epidemiology. Students can conduct research within several large prospective ongoing studies at HSPH and Harvard Medical School, including an examination of dietary factors in relation to cardiovascular disease, cancer, and other chronic diseases; a study of the interactions between nutritional and genetic determinants of disease; and the assessment of nutritional supplementation in relation to infectious agents and malnutrition.

Oral and dental health epidemiology This area prepares dentists and others interested in oral diseases for research and teaching careers in epidemiology with an emphasis on oral epidemiology and dental health. A new focus area is the links between oral conditions, nutrition, and systemic diseases such as coronary heart disease, stroke, and cancer. Students also participate in field research activities; case-control studies of oral health risk factors; or clinical trials designed to test preventive, diagnostic, or therapeutic interventions. This area of interest is jointly administered by the Department of Oral Health Policy and Epidemiology in the Harvard School of Dental Medicine and the HSPH Department of Epidemiology.

Pharmacoepidemiology This area focuses on the determinants of both unintended and expected effects of drugs and medical devices. Patterns of utilization of drugs and devices, cost-benefit and risk-benefit analyses, and investigation of the distribution of diseases possibly amenable to medical intervention represent important secondary themes. The Department of Epidemiology offers an intermediate-level course in pharmacoepidemiology and a variety of ongoing research projects. Relevant courses elsewhere in the school cover such areas as clinical trials, meta-analysis, drug regulatory affairs, decision analysis, and vaccine development. Students in pharmacoepidemiology have the opportunity to attend courses and congresses outside the school and are encouraged to undertake internships of up to three months in pharmaceutical firms or regulatory agencies. Students ordinarily have a prior degree in medicine or pharmacy. Others are expected to acquire substantially equivalent expertise in areas related to their research.

Psychiatric epidemiology This area introduces students to concepts and methods for studying the genetic and psychosocial factors that relate to the prevalence, incidence, and outcome of different types of psychiatric illnesses. Emphasis is given to issues of reliability and validity in studying such disorders among children, adolescents, and adults. The curriculum consists of six specialized courses, as well as relat-

Epidemiologic Methods Development—Post ond Present

Moleculor Biology for Epidemiologists

Moleculor Epidemiology of Concer

Studies in Moleculor Epidemiology

Infections ond Concer

Epidemiology of Aging

Epidemiology of HIV Infection, Port I: Etiology, Noturol History, ond Tronsmission

Epidemiology of HIV Infection, Part II: Design and Conduct of Theropeutic ond Prevention Interventions

Mothemoticol Modeling of Infectious Diseases

Infectious Diseose Epidemiology I and II

Epidemiologic Reseorch in Obstetrics and Gynecology

Advonced Reproductive Epidemiology

Epidemiology of Neurologic Diseoses

Implementing Prevention

Reseorch in Clinicol Epidemiology

Advonced Seminor in Breost Concer Epidemiology

Independent Study, Field Experience

RELATED OFFERINGS

Interdisciplinary Program in Molecular Epidemiology, see page 58.

Program in the Epidemiology of Infectious Disease, see page 58.

Summer Program in Clinical Effectiveness, see page 60.

Women, gender, and health course offerings, see page 58.

HAILAY *Teklehaimanot*

DOCTORAL STUDENT, DEPARTMENTS OF EPIDEMIOLOGY AND POPULATION AND INTERNATIONAL HEALTH

Hailay Teklehaimanot practiced medicine for three years in his native Ethiopia and worked on disease prevention and control programs in district offices there. Then in 1998 he came to HSPH as a research fellow. "Working in remote areas, I saw so many infectious diseases," he says. "I came to believe that prevention could be more effective than treating individual infections, so I wanted to study public health."

Teklehaimanot earned an SM in epidemiology in 2000 and is now working toward his SD in the same area. "I am interested in infectious diseases, particularly malaria, which is the most common infectious disease in Africa," he says. After receiving his degree, Teklehaimanot plans to return to Ethiopia to work on disease control and prevention programs. He would also like to teach and continue doing research.

ed courses offered in the Departments of Epidemiology, Biostatistics, Maternal and Child Health, and Health and Social Behavior.

Reproductive epidemiology In addition to unique methodological issues, this area encompasses clinical, environmental, cancer, and infectious disease epidemiology. Reproductive epidemiologists choose as their interest the broad topic of the determinants and consequences of reproduction, including women's health and male infertility. Students can explore menarche, the menstrual cycle, infertility, conception, and pregnancy as endpoints or as factors influencing disease outcomes.

The Obstetrics and Gynecology Epidemiology Center, based at Brigham and Women's Hospital, offers the opportunity to gain experience in data collection and analysis of large-scale population- and clinical-based epidemiological studies. Students interested in occupational/environmental and genetic reproductive epidemiology may pursue projects within the Reproductive Epidemiologic Working Group, consisting of faculty members from HSPH and other major public health institutions around the world. Students may also collaborate with other faculty members at HSPH, Harvard Medical School, and the Harvard-affiliated hospitals. Students are encouraged and given guidance on how to submit their own research proposals for private or federal funding.

MASTER OF SCIENCE IN EPIDEMIOLOGY (80-credit and 40-credit programs)

The master's programs provide students with basic skills in epidemiologic and quantitative methods and in computing, in preparation for research or academic careers. Graduates have taken positions as researchers in university and hospital settings and as epidemiologists for public health agencies and private companies.

The 80-credit SM program is designed for individuals who hold a bachelor's degree and have a strong background in biology and mathematics. The 40-credit program is open to applicants with a medical degree or master's-level background in biology.

Required courses for the 80-credit and 40-credit programs are the same and include introductory epidemiology and biostatistics, elements of epidemiologic research, the design and analysis of case-control and cohort studies, and the analysis of rates and proportions.

In addition to epidemiology and statistics courses, students in the 80-credit program study the basic medical sciences and the biological aspects of public health

problems. The program is primarily intended for students who expect to continue toward a doctoral degree. Recommended courses cover human physiology and the pathophysiology of human disease, regression and analysis of variance in experimental research and applied regression for clinical research, introductory cancer biology, principles of toxicology, and the practice of quantitative methods.

In the 40-credit program, remaining courses reflect areas of special interest and may include supervised research.

DOCTOR OF SCIENCE IN EPIDEMIOLOGY/ DOCTOR OF PUBLIC HEALTH

The doctoral programs are designed for students who plan careers in epidemiologic research or teaching or for those who aspire to leadership roles in the health professions. Recent graduates have become members of the faculties of major universities, medical schools, and research institutes. They also serve as epidemiologists for the National Cancer Institute, Centers for Disease Control and Prevention, other domestic and international governmental institutions, and private industry.

Applicants to the SD program should hold at least a bachelor's degree and have a strong background in biology and mathematics. For these individuals the degree generally takes four to five years to complete; candidates with relevant doctoral degrees may complete the program in three years. The DPH degree is available to students holding a prior doctorate and an MPH degree.

Course requirements are the same as for the SM program, with the addition of courses on the practice of epidemiology, advanced epidemiologic methods, and principals of screening; and for nonphysicians human physiology and the pathophysiology of human disease. Ten credits are also required in substantive courses offered by the department, 10 credits in advanced biostatistics courses, and 10 credits in a second minor field.

Unless courses equivalent to those described for the master's program have been taken previously, most of the first two years is devoted to course work. Subsequently doctoral candidates must pass the departmental written examination and the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; complete, defend, and submit a thesis; and gain experience in teaching and research.

Funding may be available for U.S. citizens or permanent residents enrolled in the doctoral program or a postdoctoral fellowship program; depending on the specialty area, funding sources include the National Cancer Institute and the National Institute of Mental Health. For U.S. citizens and permanent residents interested in cardiovascular disease or aging, research traineeships may be available through Harvard Medical School. The National Institute of Aging also offers research traineeships for doctoral students, postdoctoral fellows, and physicians engaged in postdoctoral training.

CONTACT INFORMATION

For more information about research and training in epidemiology, please contact Erik Jackman, coordinator of academic services, Department of Epidemiology, 677 Huntington Avenue, Boston, MA 02115.
Phone: 616-432-1055
Fax: 617-566-7805
E-mail: ejackman@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/Academics/epidem/index.html

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair: Meir J. Stampfer, MD, MPH, DPH. Influence of diet and exogenous hormones on health, particularly heart disease and cancer.

Alberto Ascherio, MD, MPH, DPH. Relation of dietary factors to the occurrence of human disease.

Lisa F. Berkman, MS, PhD. Social epidemiology; epidemiology of aging.

Stephen L. Buka, SM, SM, SD. Causes and prevention of behavioral and developmental disorders of children.

Kin-Wei Arnold Chan, MD, MPH, SD. Pharmacoepidemiology.

David C. Christiani, MD, SM, MPH. Occupational diseases; biomarkers and molecular epidemiology.

E. Francis Cook, MA, SM, SD. Epidemiologic methods; clinical epidemiology.

Wafaie W. Fawzi, MB, BS, MPH, SM, DPH. Etiologies of infectious diseases with emphasis on dietary and nutritional causes; relationships of dietary factors to disease in pregnancy and childhood.

Susan E. Hankinson, MS, MPH, SD. Relationships between hormonal factors and risk of breast and ovarian cancers.

David J. Hunter, MB, BS, MPH, SD. Cancer epidemiology; molecular epidemiology.

Frederick P. Li, MD, MA. Inherited susceptibility to cancer; clinical and molecular epidemiology.

Marc Lipsitch, DPhil. Theoretical, statistical, and experimental approaches to population biology and the epidemiology of infectious diseases.

Richard R. Monson, MD, SM, SD. Relationship between the workplace, the environment, and disease.

Nancy E. Mueller, SM, SD. The role of viruses in the etiology of cancer; cancer epidemiology.

Megan Murray, MD, MPH, SD. Use and evolution of molecular markers in tuberculosis; transmission dynamics of infectious diseases; study of vaccine effects.

Eric B. Rimm, SD. Relation of dietary factors to the occurrence of human diseases, in particular cardiovascular disease.

James M. Robins, MD. Development of analytic methods for drawing causal inferences from complex observational and randomized studies with time-varying exposures or treatments.

George R. Seage III, MPH, DSc. HIV epidemiology; determining the clinical outcomes of HIV patients.

Donna L. Spiegelman, SM, SD. Binary data models with measurement error and misclassification in model covariates.

Sherri O. Stuver, SD. Cancer epidemiology; virus-associated disease.

Dimitrios V. Trichopoulos, MD, SM. Cancer epidemiology.

Alexander M. Walker, MD, MPH, DPH. Pharmacoepidemiology; study design for observational research.

Walter C. Willett, MD, MPH, DPH. Relation of dietary factors to the occurrence of human disease, in particular heart disease and cancer.

Xiping Xu, MD, PhD, SM. Environmental, occupational, and genetic epidemiology of respiratory, cardiovascular, and metabolic diseases.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School or Harvard School of Dental Medicine)

Deborah Blacker, MD, SD. Genetic epidemiology of affective disorders and of Alzheimer's disease.

Carlos A. Camargo, Jr., MPH, MD, DPH. Asthma and chronic obstructive pulmonary disease.

Graham A. Colditz, MB, BS, MPH, DPH. Cancer epidemiology; diet and chronic diseases.

Gary C. Curhan, MD, SM, SD. Nephrolithiasis risk factors and prevention; analgesic nephropathy; hypertension risk factors and prevention; hypertensive disorders of pregnancy; interstitial cystitis.

Immaculata DeVivo, MPH, PhD. Etiology of cancer, specifically the relationship between genetic variation and disease risk for future prevention.

Chester W. Douglass, DMD, MPH, PhD. Oral epidemiology and health policy.

Kathleen M. Egan, MPH, SD. Epidemiology of molecular genetics of intraocular tumors; survival determinants in choroidal melanoma; epidemiology of breast and ovarian cancer.

Edward L. Giovannucci, MD, MPH, SD. Etiologies of cancer with emphasis on dietary causes; methodologies to measure dietary factors in epidemiologic studies.

Francine Grodstein, SD. Aging; health effects of exogenous hormones; risk factors for Alzheimer's disease.

Bernard L. Harlow, MPH, PhD. Survey research methods; risk factors associated with borderline and malignant ovarian tumors; epidemiologic indicators for adverse obstetrical outcomes.

Catherine Hayes, DMD, SM, DMSc. Epidemiology of craniofacial anomalies; outcomes research in the area of periodontal disease.

Kaumudi J. Joshipura, SM, SD. Oral epidemiology.

Andrzej S. Krolewski, MD, PhD. Diabetes mellitus epidemiology.

I-Min Lee, MB, BS, MPH, SD. Epidemiology of cancer; physical activity and fitness and cancer incidence.

JoAnn E. Manson, MD, MPH, DPH. Chronic disease epidemiology.

Karin B. Michels, MS, MPH, SD, MSc. Nutritional epidemiology and methology; perinatal and reproductive risk factors for breast cancer; epidemiologic methods.

Murray A. Mittleman, MDCM, MPH, DPH. Epidemiology of acute risk factors triggering myocardial infarction and stroke; methodological problems in implementing case-crossover studies.

Jane M. Murphy, PhD. Longitudinal studies of psychiatric epidemiology in general populations.

Johanna M. Seddon, MD, SM. Ophthalmology.

Daniel E. Singer, MA, MD. Preventive health care.

Ming T. Tsuang, MD, PhD. Follow-up and family studies of psychiatric disorders with emphasis on schizophrenia and affective disorders.

ADJUNCT FACULTY

Hans-Olov Adami, MD, PhD. University Hospital, Uppsala, Sweden.

Richard C. Dicker, MD, SM. Centers for Disease Control and Prevention.

Anders Ekbom, MB, MD, PhD. University Hospital, Uppsala, Sweden.

Albert Hofman, MD, PhD. Department of Epidemiology and Biostatistics, Erasmus University Medical School, Rotterdam, the Netherlands.

Chung-cheng Hsieh, MPH, SM, SD. Division of Biostatistics and Epidemiology, University of Massachusetts Medical Center.

K. Malcolm Maclure, SM, SD. Ministry of Health, Province of British Columbia, Canada.

Ralph S. Paffenbarger, Jr., MD, DrPH. Stanford University.

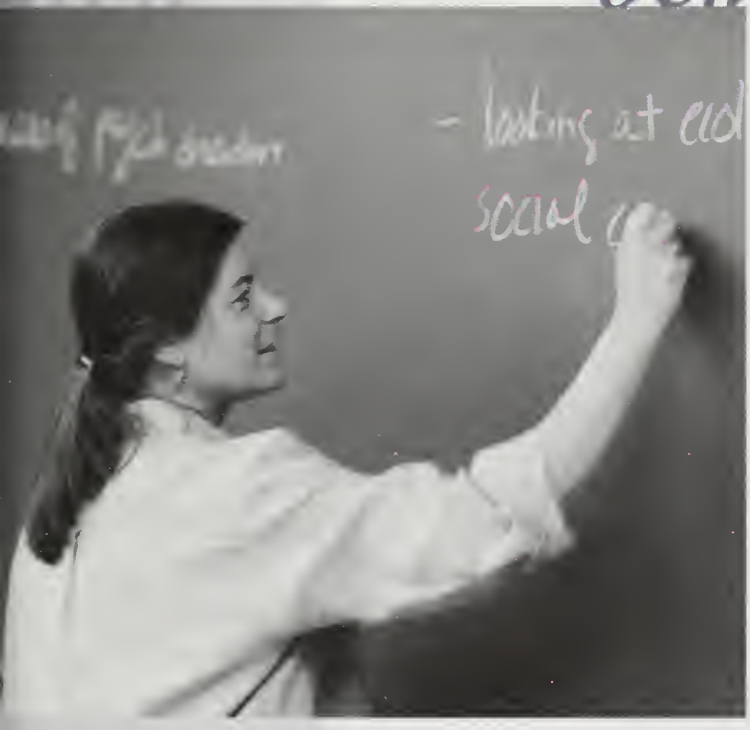
Kenneth J. Rothman, DMD, MPH, DPH. Departments of Epidemiology and Community Medicine, Boston University.

Susan L. Santangelo, SD. Department of Psychiatry, New England Medical Center at Tufts University School of Medicine.

Ralph J. Timperi, Jr., MPH. Massachusetts Department of Public Health.

THE MISSION OF THE DEPARTMENT OF HEALTH AND SOCIAL BEHAVIOR IS TO IDENTIFY THE SOCIAL AND BEHAVIORAL DETERMINANTS OF HEALTH AND TO DEVELOP AND EVALUATE INTERVENTIONS AND POLICIES LEADING TO THE IMPROVEMENT OF THE PUBLIC'S HEALTH AND QUALITY OF LIFE.

DEPARTMENT OF *health & social behavior*



THE DEPARTMENT ACCOMPLISHES THIS AIM BY INTEGRATING knowledge and methods from the social sciences with traditional core sciences of public health. The department's educational mission is to train both scholars and practitioners: scholars whose research will illuminate basic social determinants of health and who will identify and test innovative social interventions; practitioners who are skilled in designing, implementing, and evaluating health-enhancing interventions in action settings and who appreciate the social ecology of health behavior as well as social and policy leverage points.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course listings are available at http://www.hsph.harvard.edu/registrar/courses.

Methods for Reseorch on Sociol ond Behoviorol Dimensions of Public Heolth

Society ond Heolth

Innovotive Strotegies in Heolth Educotion

Communicotion in Heolth Core Settings

Understonding Roce, Ethnicity, ond Heolth: Perspectives from the Sociol ond Behoviorol Sciences

Heolth Promotion Through the Moss Medio

Developing Rodio Communicotions

Heolth Literocy

History, Politics, ond Public Heolth: Theories of Diseose Distribution Across Time ond Culture

Introduction to High-Risk Behoviors: Epidemiology, Prevention, ond Public Policy

Psychosociol Theories of Heolth ond Heolth Behovior

Heolth ond Sociol Policy in the Workploce

Plonned Sociol Chonge

Psychosociol Aspects of Aging

Future of Heolth Communicotion: New Medio ond Emerging Technologies

Community Intervention Reseorch Methods

Health ond Sociol Behovior Deportment Proseminor

Quolitative Reseorch Methods for Public Heolth

Sociol Epidemiology

Sociol ond Behoviorol Reseorch Methods I ond II

Approaches to Internotionol Tobocco Control

Inequolity ond Heolth

Heolth ond Sociol Behovior Moster's Seminor

Heolth ond Sociol Behovior Doctorol Seminor

Policy Anolysis Methods for Public Heolth

DEGREE PROGRAMS IN HEALTH AND SOCIAL BEHAVIOR

As described below, the department offers both 80-credit and 40-credit master of science (SM) programs, as well as a program leading to the doctor of science (SD) degree.

All students in the Department of Health and Social Behavior (HSB) are required to take (at minimum) the schoolwide requirements in biostatistics and epidemiology; students in SM programs must also fulfill practice core requirements in environmental health and health policy and management. The department requires two core HSB courses as well as specified courses for master's and for doctoral students. The department highlights three areas of interest. Doctoral students declare an area of interest; master's students are not required to declare an area of interest but are encouraged to take course work in all three.

HSB areas of interest are as follows:

Health and social policy A wide range of social policies—including but not limited to labor, poverty, family, housing, and educational policy—have a dramatic impact on health. This area of interest prepares students to design new and improve existing social policies and focuses on strategies for the successful implementation of social policies that improve health. Students who study in this area may be interested in working on public policy through research, within the government, or in a nonprofit organization.

Planned social change This area of interest focuses on the application of theory in the design of intervention programs, as well as on research and evaluation methodology. The area includes work on interventions using randomized clinical trial designs and quasi-experimental approaches. Attention is given to the following design steps: problem diagnosis, assessment, formative research, program design, and evaluation. The social settings for interventions may be communities, workplaces, schools and colleges, and health care facilities. Populations of interest include those who are underserved, marginalized, and in special need. Intervention strategies include educational interventions, community organizing and development, social marketing, communication, adult learning approaches, and advocacy.

Social determinants of health This area of interest focuses on the analysis of the major social conditions that affect the health of populations. Research emphasizes socioeconomic position, social and economic inequality, discrimination, social networks and support, social capital, work conditions, and psychological states. Seminars, tutorials, and courses enable

students to explore a range of health consequences of various social factors by studying varied subgroups, at different times and places and under diverse and changing conditions. Students examine mechanisms and processes through which social factors exert their impact, and also investigate mechanisms that mediate or moderate relationships between social factors and health outcomes.

Limited funding is awarded on a competitive basis to qualified applicants in both master's and doctoral programs. A fellowship for doctoral students is also available in the area of cancer prevention, and some doctoral fellowships may also be available for underrepresented minorities.

MASTER OF SCIENCE IN HEALTH AND SOCIAL BEHAVIOR (80-credit and 40-credit programs)

The 80-credit master's program prepares students for work in a variety of community, public, and private settings with a focus on program design, public policy supervision, and evaluation; and for work as members of research teams. One recent graduate is serving as the evaluator on a violence prevention program for adolescents; another works with a nonprofit organization coordinating international efforts related to women's health.

Students in the 80-credit program enter with a background (often a major) in the social/behavioral sciences and experience in the field; previous graduate work is not required. For the 40-credit program students must have a related graduate degree and experience in the social/behavioral sciences or a public health field.

In the 80-credit program students must earn at least 20 credits in departmental courses. After fulfilling HSPH, HSB, and practice core requirements, students are encouraged to delineate professional goals and to develop an area of expertise. They often focus on a subject area (such as AIDS, addiction, cardiovascular risk reduction, cancer, environmental health, health education, the health of families, labor and workplace issues, literacy, or women's health) and/or a skill area (such as program design, program evaluation, communication, public policy, or marketing). Students are encouraged to complete an internship as part of their training.

For the 40-credit program students must earn 15 credits in departmental courses. After fulfilling core HSPH, HSB, and practice core requirements, students are encouraged to focus their work in a specific content or skill area. They should work closely with their advisers to develop a study plan early in the fall semester.

DOCTOR OF SCIENCE IN HEALTH AND SOCIAL BEHAVIOR

The doctoral programs train students as scholars and researchers who will identify new social and behavioral risks, work in health and social policy, and test innovative social interventions; or as practitioners who will design, implement, and evaluate health-enhancing interventions or public policies. Recent graduates are working in research and academic settings, including schools of public health.

Most students enter the doctoral programs with a strong foundation in the social and behavioral sciences and with an earned master's degree. The department accepts a small number of students without a master's degree directly into the doctoral program.

Doctoral programs are offered in the areas of interest described earlier (health and social policy, planned social change, and determinants of health). Students should consult the department's doctoral handbook for a listing of required courses in each area. Students in the doctoral program must pass the departmental written examination and the schoolwide oral qualifying examination. They must declare a major (20 credits) and two minor fields (10 credits each). In addition, they must adhere to the doctoral timetable for maintaining satisfactory progress and complete, submit, and defend a thesis based on original research.

Place, Migration, and Health

Independent Study, Field Experience

RELATED OFFERINGS

MPH concentration in family and community health, see page 54.

Women, gender, and health course offerings, see page 58.

CONTACT INFORMATION

For more information about research and training in health and social behavior, please contact Michele Brooks, academic coordinator, Department of Health and Social Behavior, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-3775
Fax: 617-432-3123
E-mail: mbrooks@hsph.harvard.edu

MARIA Melchior

MASTER'S STUDENT, DEPARTMENT OF HEALTH AND SOCIAL BEHAVIOR

Maria Melchior, a native of Poland who grew up in Paris, France, graduated from Brandeis University with a BA in psychology in 1997. For the next two years she worked as a research coordinator at Brigham and Women's Hospital (BWH) in Boston, conducting clinical trials of hormone replacement therapy for women.

In 1999 Melchior entered the health and social behavior program at HSPH. "It was difficult to see myself moving forward professionally without an advanced degree," she says, adding that her work at BWH made her realize that she wanted to work in the public health sector.

After receiving her master's, Melchior will continue on for a doctoral degree from the school. "I want to stay in the policy area, focusing on health inequalities," she says. Ultimately Melchior hopes to return to France to build a career in public health policy.

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair (acting): **Glorian Sorensen,** MPH, PhD. Cancer prevention in the workplace; intervention research in community and occupational settings.

Dolores Acevedo-Garcia, MPA, PhD. Effects of residential segregation on minority health; health effects of welfare reform and immigration policies on U.S. immigrants and citizens.

Norman B. Anderson, MA, PhD. Race, ethnicity, social class, and health; mass media approaches to public health.

Elizabeth M. Barbeau, MPH, ScD. Workplace health and safety policy; work-site cancer prevention; tobacco policy; health inequalities.

Lisa F. Berkman, MS, PhD. Social epidemiology; epidemiology of aging.

Karen M. Emmons, MA, PhD. Cancer prevention; smoking and health effects of environmental tobacco smoke; health care and community-based interventions.

Steven L. Gortmaker, SM, PhD. Statistical evaluation methods; socioeconomic position and child health; social, behavioral, environmental, and policy influences on obesity and other chronic conditions.

S. Jody Heymann, MPP, MD, PhD. Influence of social, labor, and welfare policy on health; health care policy for high-risk children with chronic conditions.

Ichiro Kawachi, MD, PhD, DipCommH. Social inequalities in health, especially related to income distribution; stress and cardiovascular disease; quality of life and healthy aging; tobacco control.

Bruce P. Kennedy, MEd, EdD. Social determinants of health inequalities; interactions between social determinants of child and adolescent health and developmental vulnerabilities.

Nancy Krieger, MS, PhD. Social inequalities in health, especially regarding race/ethnicity, social class, and gender; cancer, especially breast cancer; cardiovascular disease, especially hypertension.

Laura D. Kubzansky, MSc, PhD, MPH. Psychosocial determinants of health; social inequality and health; emotion and cardiovascular disease.

Rima E. Rudd, MSPH, ScD. Public health and adult education pedagogy; normative change and change strategies, including small-group communications, community organizing, and social marketing.

Jay A. Silverman, MS, PhD. Etiology and prevention of intimate -partner violence; legal structures to prevent violence against battered mothers and their children.

Henry Wechsler, AM, PhD. Alcohol and drug use and related high-risk behaviors among youth; epidemiologic, preventive, and public policy approaches to substance-abuse prevention.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

Lawren H. Daltroy, MPH, DrPH. Social psychology and decision-making theory applied to patient education and doctor-patient communication in chronic disease; functional status measurement in arthritis.

Thomas S. Inui, MD, ScM. Primary care effectiveness; health-related behavior; clinical prevention.

Sue Ellen Levkoff, MSW, SM, SD. Influence of culture on the experience of and response to dementia symptoms; prevention of excess disability in cognitively impaired aged.

Nancy A. Rigotti, MD. Disease prevention in medical practice; development and evaluation of smoking cessation methods in health care settings; evaluation of tobacco control public policy.

ADJUNCT FACULTY

H. William DeJong, MA, PhD. Boston University School of Public Health.

Roberta E. Goldman, MA, PhD. Boston University School of Medicine.

Michael G. Marmot, MB, MPH, PhD. International Centre for Health and Society.

Anne M. Stoddard, SM, SD. University of Massachusetts.

Gwen L. Zornberg, MD, MS, ScD. Boston University School of Public Health.

THE DEPARTMENT OF HEALTH POLICY AND MANAGEMENT IS A MISSION-ORIENTED DEPARTMENT CONCERNED WITH IMPROVING THE HEALTH CARE DELIVERY SYSTEM AND MITIGATING PUBLIC HEALTH RISKS IN THE UNITED STATES AND ABROAD. THE DEPARTMENT IS DEDICATED TO RESOLVING MAJOR MANAGEMENT AND HEALTH POLICY PROBLEMS THROUGH ORIGINAL RESEARCH, ADVANCED TRAINING, AND DISPUTE RESOLUTION.

DEPARTMENT OF *health policy & management*

Research priorities in the Department of Health Policy and Management are organized into eight broad areas: health financing and insurance, including the creation of new physician payment systems and the design of public policies dealing with rising insurance premiums; management of health hazards, including use of risk assessment to set priorities for environmental health protection; management of health care organizations, encompassing the application of corporate strategic planning concepts to the challenges faced by health systems and pharmaceutical firms; management and evaluation of medical technology, including the meta-analysis of data from clinical trials; business and labor in health, including the negotiation of occupational safety and health care benefits in the collective bargaining process; international health, including evaluation of the cost-effectiveness of health programs in developing countries; quality of health care, encompassing the design of better methods to measure quality; and health care reform, involving the development of partnerships between the department and the corporate community to explore critical aspects of health policy and management.

The department's problem-solving orientation is exemplified by its strong ties to leading health practitioners in hospitals, managed-care plans, community health centers, health advocacy groups, corporate medical departments, health and environmental consulting firms, state and local health departments, legislative committees, federal regulatory agencies, and international agencies. Practical skills are emphasized by an interdisciplinary faculty that includes management specialists, decision analysts, accountants, physicians, lawyers, policy analysts, economists, political scientists, and program evaluators.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Pharmacoeconomics

Role of the Physician Manager in Health Care

Economic Analysis for Public Health

Health Core Regulation ond Plonning

Economics of Heolth Policy

Medicol Malproctice ond Risk Monogement

New Developments in Heolth Low

Program Evoluotion in Heolth Policy

Public Heolth Low

Heolth Core Low ond Policy

Advonced Topics in Heolth Low ond Policy

Finonciol Transoctions ond Anolysis

Finonciol Monogement of Heolth Core Organizotions

Public Speoking for Monogers

Legol ond Ethicol Issues in the AIDS Epidemic

Urbon Violence in Americo

Introduction to the New Americon Heolth Core System: Low, Policy, ond Monogement

Monoging People in Heolth Core Organizotions

Operotions Monogement in Service Delivery

Strotegic Morketing Monogement in Heolth Systems

Monoged Core Policy Issues

Strotegic Use of Informotion Systems in Heolth Core Delivery

Applied Finonciol Anolysis of Heolth Core Orgonizotions I ond II

Heolth Core in the U.S: System, Policy, ond Comparotive Perspectives

Politics and Strotegies for Chonge in Health Policy

Heolth Economics: Economic Anolysis of the Heolth Core System

Phormoceuticol ond Biotechnology Industries: Public Policy ond Regulatory Issues

Public Heolth Leodership Skills

DEGREE PROGRAMS IN HEALTH POLICY AND MANAGEMENT

As described below, the department offers both 80-credit and 40-credit master of science (SM) programs, a nonresidential, part-time master of science in health care management for physicians, and a doctor of science (SD) program. The department also participates in the universitywide doctor of philosophy (PhD) Program in Health Policy. An environmental science and risk management area of interest is offered jointly with the Department of Environmental Health.

MASTER OF SCIENCE IN HEALTH POLICY AND MANAGEMENT (80-credit and 40-credit programs)

The 80-credit SM program emphasizes professional skills and concepts; a solid grounding in the substance of health problems; rigorous quantitative training; and a curriculum that combines professional, academic, and clinical activities. Acquired knowledge is applied to practical situations through a required summer internship program and a field research project. The program is designed for students who are building professional careers in health-related fields and who aspire to leadership roles in the public or private sector. Recent graduates have taken positions in organizations such as Blue Cross/Blue Shield, Partners Health Care, MedStat, Codman Square Community Health Center, John Snow, Inc., Mathematica Policy Research, the Commonwealth Fund, and the Center for Health Care Strategies. Others have gone on to doctoral and fellowship programs.

Applicants to the 80-credit program come from a wide variety of undergraduate fields. They are expected to have work experience and an academic record, particularly in quantitative and analytical courses, that suggest outstanding potential in the areas of health policy and management. Applicants should have at least two years of relevant postbaccalaureate work experience in the health field; exceptions are occasionally made for outstanding candidates. Deferred admission is available for applicants who demonstrate strong potential but who lack sufficient professional experience in the health sector. These applicants work within the health field in positions approved by the program for a minimum of one year before matriculating.

Of the 80 credits necessary to earn the SM, required courses account for 30 to 35. All students take courses in epidemiology, ethics, statistics, environmental health, health and social behavior, economics, and health policy and management. In addition, students must satisfy the requirements of at least one of the three areas of interest: management, for students pursuing management careers in public- or private-sector health institutions; policy, for those who wish to become involved in the formulation of health policy, including medical care policy, heath finance and insurance, access to health care, payment to institutions and practitioners, political analysis and strategy, and medicare and medicaid reform; and research, for students looking toward doctoral education and research careers in fields such as health economics, quality of care, technology assessment, health decision analysis, and advanced statistical analysis. The requirements for the management, policy, and research areas of interest are described in a guide available from the department. After the required credits have been completed, students are encouraged to enroll in relevant courses at Harvard Business School, Kennedy School of Government, and Harvard Graduate School of Education.

The 40-credit SM program is designed for students pursuing research careers in public- or private-sector health care institutions, particularly physicians and other candidates with relevant advanced degrees who desire intensive training in analytic and quantitative skills. The degree is appropriate for students interested in either domestic or international research questions. Recent graduates have taken research positions at academic medical centers and other health care organizations.

Applicants to the 40-credit program should hold graduate medical or other professional degrees and have significant experience in health services. They typically expect to devote a substantial portion of their careers to research, particularly in areas such as health services research, cost-effectiveness analysis, and clinical decision making.

Required courses for this program include introductory biostatistics or introductory statistics for medical research, introductory epidemiology or an introduction to clinical epidemiology, up to 10 tutorial credits, and an additional 10 credits in courses within the department. Recommended electives include upper-level courses in biostatistics, epidemiology, health economics, health services research, health decision sciences, quality improvement, technology assessment, and program evaluation.

MASTER OF SCIENCE IN HEALTH CARE MANAGEMENT FOR PHYSICIANS

The SM in health care management is a 40-credit, two-year, part-time, nonresidential degree program, which trains clinicians in the executive skills required for management. This program is targeted to mid-career MDs, DMDs, and DDSs with significant management responsibilities who wish to be more effective in their roles in the health care sector.

The program includes course work on strategy determination, financial analysis, negotiation, organizational behavior, operations management, information systems, and quality-of-care management. Degree candidates are required to spend three weeks each summer on campus, as well as five four-day weekends (Friday through Monday) each academic year. Scheduled teleconferences, an estimated ten to fifteen hours per week of assignments, and a final practicum are also required.

This is a closed-cohort learning situation. Attendance at all sessions is mandatory, and previous courses and/or degrees will not be applied to degree requirements. No auditing or cross-registration is allowed.

DOCTOR OF PHILOSOPHY IN HEALTH POLICY

The doctor of philosophy in health policy is a collaborative program of five Harvard University faculties: the Graduate School of Arts and Sciences, School of Public Health, Medical School, Kennedy School of Government, and Business School. Because this is an interfaculty program, enrolled students take courses throughout the university. The PhD is awarded by the Faculty of Arts and Sciences. (Please note that HSPH forms cannot be used to apply for this program. All potential students must obtain their application materials from the Graduate School of Arts and Sciences.)

Individuals with doctoral-level training in health policy are highly sought as teachers in institutions of higher learning and/or as researchers. Graduates of the PhD Program in Health Policy are employed in schools of public health; medical schools; schools of public policy; and such organizations as the Kaiser Family Foundation, the Institute for Ethics at the American Medical Association, and the RAND Corporation.

Applicants must submit GRE or GMAT exam scores that are less than five years old, and individuals whose native language is not English must take the TOEFL. Preference is given to applicants with either relevant work experience or some prior graduate work, though a graduate degree is not required for admission. The program is particularly committed to increasing the diversity of its student population; minority candidates, including African-Americans, Native Americans, and Hispanic Americans, are especially encouraged to apply.

Degree requirements include approximately two years of course work; a concentration in one academic discipline (decision science, economics, ethics, evaluative science and statistics, management, medical sociology, or political analysis); at the thesis stage specialization in one of four policy areas (environmental health, health care services, mental health, or public health); general and concentration exams (usually at the end of the second year); a thesis prospectus and oral examination; a thesis based on original research; and a thesis defense.

Financial aid is available to applicants admitted to the program, especially from the Agency for Healthcare Research and Quality and the National Institute of Mental Health. Full tuition and stipend are available to admitted minority students with demonstrated need.

DOCTOR OF SCIENCE IN HEALTH POLICY AND MANAGEMENT

The SD program in health policy and management is designed for physicians, lawyers, and other professionals who are interested in doctoral-level research training in health policy and who are committed to applied, interdisciplinary research. The program prepares graduates to perform research in the academic or professional realm.

Applicants must hold an MD, a JD, a DDS, or a PhD degree. Moreover, applicants should have a strong aptitude in a quantitative discipline (demonstrated by prior academic performance, work experience, and standardized test scores from the GRE, DAT, MCAT, or LSAT), experience in the health sector, and the ability to perform original and independent work. Applicants should indicate their anticipated area of interest within the department and anticipated faculty mentor (if known) in their application essay.

Candidates complete a set of required courses in epidemiology, biostatistics, decision science, economics, program evaluation, health politics, and public health law (lawyers only). In addition, each student works closely with a faculty adviser to develop an individual plan of study. While students in this program have the opportunity to take courses throughout the university, all required courses are offered through HSPH. Candi-

Politicol Anolysis and Strategy for U.S. Health Policy

Quality Improvement in Health Care

Payment Systems in Health Care

Quality Monogement in Health Care

Finoncing Health Care in Develaping Cauntries

Camporative Health Systems af Industrialized Societies

Overview af Intimote Partner Vialence

Oral Health Palicy Reseorch Seminor

Survey of Methads and Application in Health Services Research

Current Issues in Health Policy

Skills and Methods af Health Core Negatiotion ond Canflict Resalution

Decision Analysis for Health and Medical Proctices

Methods for Decision Anolysis in Public Health ond Medicine

Cast-Effectiveness and Cost-Benefit Analysis in Public Health and Medicine

Decision Theory

Environmentol Health Risk: Cancepts ond Coses

Decisian Analysis in Clinicol Reseorch

Management Science

Applied Reseorch ond Practice in Health Policy and Manogement

Applied Reseorch in the Low of Health Policy and Management

Research Ethics

Public Opinion, Polling, and Public Policy

Practice af Public Health in the United States

Mental Health, Palicy, ond Economics in the United States

Legol ond Regulatary Issues in Monoged Core

Introduction to Management of Health Core Orgonizotions

Medicol Informotics

Quolity Improvement in Health Core

Orgonizing Consumer ond Cammunity Interests in the Health System

Infarmatian Systems in Health Care

Independent Study, Field Experience

WOLFGANG CHRISTOPH Winkelmayer

DOCTORAL STUDENT, DEPARTMENT OF HEALTH POLICY AND MANAGEMENT

After receiving his medical degree from Vienna University in Austria in 1990, Wolfgang Winkelmayer practiced medicine in his native country for eight years. As a senior staff physician at Kaiser Franz Josef-Hospital and director of Dialysis and Renal Services, Winkelmayer had achieved the highest professional rank he could attain with his training.

He came to HSPH in 1998 because he wanted to further his education. "I had always been drawn to the managerial aspects of health care," he says, and the HSPH program appealed to these interests. Winkelmayer received an MPH in 1999 and decided to stay on for his doctorate. Today Winkelmayer is particularly focused on outcomes research and the economic evaluation of medical technology. He hopes to continue his research and teaching at HSPH or Harvard Medical School.

RELATED OFFERINGS

Environmental science and risk management area of interest, Department of Environmental Health, see page 14.

MPH concentrations in health care management and in law and public health, see pages 54–55.

CONTACT INFORMATION

For more information about SM and SD programs in health policy and management, please contact Janet Weinstein-Zanger, director of academic programs, Department of Health Policy and Management, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4511
Fax: 617-432-3699
E-mail: jweinste@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/hpm

For more information about the SM degree in health care management, please contact Sharon O'Brien, administrator, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4324
E-mail: smobrien@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/mhcm

For more information about the PhD program, please contact Joan P. Curhan, director, PhD Program in Health Policy, 79 John F. Kennedy Street, Cambridge, MA 02138.
Phone: 617-496-5412
Fax: 617-496-9053
E-mail: Joan_Curhan@harvard.edu
Web: http://www.fas.harvard.edu/~healthpl

For application materials for the PhD program (program 8500), please contact the Graduate School of Arts and Sciences Admissions Office, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315
Web: http://www.gsas.harvard.edu/admissions

dates normally complete two academic years of study in residence at HSPH; pass a written departmental general examination and an oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis for publication. The doctoral thesis, advised by a faculty committee of three or more members, is normally comprised of three publishable papers.

POSTDOCTORAL FELLOWSHIPS

The department offers two-year postdoctoral fellowships to candidates who wish to do independent research in such areas as quality of medical care, technology assessment and cost-effectiveness, health care policy, management of health care organizations, and AIDS policy. The program emphasizes methodology in evaluation research, decision science, economics, and organizational analysis and permits fellows to design individualized programs of study. Fellows may also apply for admission to a formal degree program. Candidates must hold an MD, DDS, PhD, or equivalent degree and must be U.S. citizens or permanent residents. Applicants must submit a curriculum vitae, three letters of reference, and a statement describing career goals, research interests, and reasons for applying. The application deadline is November 15, 2001, for a fellowship beginning in July 2002.

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair: Arnold M. Epstein, AM, MD. Access and quality of care, especially in disadvantaged populations.

Deborah H. Bennett, MS, PhD. Fate and transport of persistent organic chemicals in a multimedia environment as related to environmental risk analysis.

Robert J. Blendon, MBA, MPH, ScD. Politics of health care; access to health care; approaches to health care reform; influence of public opinion in shaping health policy.

Harvey V. Fineberg, MD, MPP, PhD. Technology assessment; cost-effectiveness and decision analysis; AIDS policy, prevention, and education; vaccine evaluation and policy; health care reform.

Susanne J. Goldie, MD, MPH. Development of disease-specific transition models; quality-of-life assessment; cost-effectiveness analysis of preventive interventions.

John D. Graham, AM, PhD. Environmental protection; prevention of intentional and accidental injury.

George M. Gray, MS, PhD. Risk characterization to inform policy decisions; risk assessment and right-to-know; food safety.

James K. Hammitt, SM, MPP, PhD. Mathematical modeling and analysis of economic behavior and decision making under uncertainty.

David Hemenway, AM, PhD. Intentional and unintentional injury; health care economics.

William C. Hsiao, MPA, PhD. Health care systems; control of health care costs; universal insurance coverage.

Nancy M. Kane, MBA, DBA. Financial strategies of health care organizations; provider behavior under third-party payment systems.

Jack Kasten, MPH, JD. Managed care; service utilization; manpower issues; hospital organization and management.

Karen M. Kuntz, SM, SD. Cost-effectiveness analysis of cancer-screening strategies and development of disease-specific multiattribute utility scales.

Jonathan I. Levy, SD. Estimation of health impacts of air pollution, using both health metrics and monetary valuations; public health benefits of energy conservation.

Leonard J. Marcus, MSW, PhD. Negotiation, conflict resolution, and use of mediation in health care settings; effects of conflict on health care decision making and outcomes.

Michelle M. Mello, MPhil, PhD, JD. Bioethics; managed care; medicare; politics of health care reform; legal issues in the regulation of health care providers.

Jack Needleman, MA, PhD. Health economics and policy; econometrics; research design and evaluation; applied policy analysis; management of the policy process; hospital finance.

Peter J. Neumann, MA, SD. Cost-effectiveness analysis in health and medicine; pharmacoeconomics; medical technology assessment; and government policy on pharmaceuticals and medical technology.

Joseph P. Newhouse, PhD. Financing and organization of medical care; medical malpractice; manpower policy; outcome research.

R. Heather Palmer, MB, BCh, SM. Quality of health care; incorporation of evaluation measures into health care reform plans.

Deborah B. Prothrow-Stith, MD. Community-based violence prevention; violence prevention protocols for primary care settings.

Marc J. Roberts, PhD. Health policy; environmental policy; ethical aspects of allocating scarce public health resources.

Meredith Rosenthal, PhD. Empirical studies of the impact of financial incentives and organization on physician behavior; econometric models of health care provider behavior.

David M. Studdert, LLB, MPH, SD. Medical malpractice and quality of care; health law and regulation; dispute resolution; injury and disability policy; medical ethics.

Katherine Swartz, MS, PhD. Populations without health insurance; financing of universal health insurance; structures of financial incentives for physicians.

Kimberly M. Thompson, MS, SD. Analysis of the risks, costs, and benefits of using airbags as lifesaving devices; applications of value of information (VOI) techniques to environmental health decisions.

Milton C. Weinstein, AM, MPP, PhD. Cost-effectiveness of health practices and technologies.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

David W. Bates, MD, SM. Clinical decision making and physician behavior; quality of care and cost-effectiveness; outcome assessment.

Donald M. Berwick, MPP, MD. Health care quality assessment, management, and improvement; technology assessment and cost-effectiveness analysis; decision analysis and clinical epidemiology.

Troyen A. Brennan, MA, JD, MPH, MD. Medical ethics; personal injury and environmental litigation; medical malpractice and health policy reform.

David J. Cohen, MD, SM. Application of health outcomes research and cost-effectiveness analysis to interventional cardiology.

Craig C. Earle, MD MSc. Clinical epidemiology; economic evaluation; quality assessment.

G. Scott Gazelle, MD, MPH, PhD. Technology assessment; health services research.

Robert A. Greenes, MD, PhD. Medical informatics; design and development of a modular approach to knowledge management; facilitating integration of the work of multiple contributors.

Richard C. Hermann, MD, SM. Variation and appropriateness of mental health practices; quality assessment and improvement of mental health care.

Thomas H. Lee, Jr., MD, SM. Prognostic stratification in and cost-effectiveness analysis of cardiovascular disease management.

Matthew H. Liang, MD, MPH. Epidemiology of rheumatic disease and disability; clinimetrics; health services research; technology assessment.

Tracy A. Lieu, MD, MPH. Children's primary care delivery and outcomes; cost-effectiveness analysis.

Jane C. Weeks, MD, SM. Outcomes of cancer treatment; effectiveness of resource utilization in medical oncology; medical decision making in oncology.

ADJUNCT FACULTY

Donald S. Bialek, MD, SM, MPH. Consultant.

Angela Browne, PhD. Soros Institute of Peace.

David E. Burmaster, MPP, PhD. Alecon, Cambridge, MA.

S. Philip Caper, MS, MD. Codman Research Group, Inc.

Gail Charnley, PhD. Energy Resources Company, Cambridge, MA.

Karl P. Claxton, MSc, Dphil. University of York.

Mark G. Field, AM, PhD. Boston University.

Kenneth A. Freedberg, MD, SM. Boston University School of Public Health.

Pamela S. Green, JD. Consultant.

Sheldon Greenfield, MD. Tufts University.

Amy A. Harbaugh, MBA. Community Health Center Capital Fund, Boston.

Maria G. M. Hunink, MD, PhD. Erasmus University Medical School, the Netherlands.

Andrew L. Hyams, JD, MPH. Urban Health Institute, Boston Department of Health and Hospitals.

Sherrie H. Kaplan, MPH, MSPH, MS, PhD. Tufts University School of Medicine.

Christian M. Koeck, MD, MPH, SM, SD. Vienna City Hospital Association.

Zita Lazzarini, MPH, JD. Consultant.

Lucian L. Leape, MD.

Bengt Liljas, PhL, PhD. Medical and Scientific Affairs, Astra Pharmaceuticals and AstraZeneca.

Eugene Litvak, MS, PhD. Boston University School of Public Health.

Ragnar E. Löfstedt, MA, PhD. Surrey University.

George D. Lundberg II, MD, MS, ScD. Medscape.

John E. McDonough, MPH, PhD. Institute for Health Policy, Brandeis University.

Daniel D. Moriarty, MBA. John Snow, Inc.

George B. Moseley III, MBA, JD. University Seminar Center.

Benjamin W. Moulton, MPH, JD. American Society of Law, Medicine, and Ethics.

Jeremy J. Nobel, MD, MPH, SM. GTE Laboratories.

John A. Norris, JD, MBA. John A. Norris Esquire, PC.

James L. J. Nuzzo. Colchester Group.

Joseph S. Pliskin, SM, PhD. Ben-Gurion University.

Dorothy E. Puhy, MBA. Dana-Farber Cancer Institute.

Howard Rivenson, MBA.

Lorenz R. Rhomberg, PhD. Gradient Corporation.

Richard B. Siegrist, Jr., MS, MBA. Transition Systems, Inc.

Nancy C. Turnbull, MBA. Consultant.

Glenn K. Wasek, SM. John Snow, Inc.

THE DEPARTMENT OF IMMUNOLOGY AND INFECTIOUS DISEASES FOCUSES ON THE BIOLOGICAL, IMMUNOLOGICAL, EPIDEMIOLOGICAL, AND ECOLOGICAL ASPECTS OF VIRAL, BACTERIAL, PROTOZOAN, AND HELMINTHIC DISEASES OF ANIMALS AND HUMANS AND THE VECTORS THAT TRANSMIT SOME OF THESE INFECTIOUS AGENTS.

DEPARTMENT OF

immunology & infectious diseases

RESEARCH IN THE DEPARTMENT EMPHASIZES BASIC PATHOGENIC mechanisms that may lead to better diagnostic tools, the development of vaccines and other interventions for prevention and control of infection and disease, and the identification of new targets for antiviral and antiparasitic drugs. Laboratory-based research within the school may be supplemented by field-based studies of epidemiological and ecological aspects of infectious disease transmission and control. Diseases of developing countries are emphasized.

Members of the department take a multidisciplinary approach that includes immunology, molecular biology, public health entomology, cell biology and ultrastructure, biochemistry, pathology, virology, epidemiology, and ecology. They undertake research both within the school and around the world.

Infectious diseases currently under study include protozoa (malaria, leishmania, ameba, giardia), helminths (schistosomes, filaria, onchocerca), viruses (HIVs, leukemia retroviruses, West Nile and eastern equine encephalitis), and bacteria (Lyme disease agents, ehrlichia, tuberculosis). Further immunologic studies focus on genetic regulation of the immune response, molecular mechanisms of the regulation of class II genes, the function and regulation of T-cell-derived cytokines, and cytokines involved in the regulation of inflammation.

DEGREE PROGRAMS IN IMMUNOLOGY AND INFECTIOUS DISEASES

As described below, the department offers doctor of science (SD) and doctor of philosophy (PhD) degree programs. The department does not offer a master of science program.

Students in the two degree programs choose among the areas of interest described below:

Immunology The curriculum currently focuses on genetic regulation of the immune response, molecular mechanisms of the regulation of class II genes, and the function and regulation of T-cell-derived cytokines. Students take courses in cell biology, immunology, and molecular immunology.

Immunology and molecular biology of parasitic and other infections This area of interest introduces students to recent advances in the biology of parasitic and infectious diseases and provides background for conducting research on these diseases. The program emphasizes molecular biology, immunology, cell biology, and the epidemiology of parasites.

Infectious disease epidemiology and tropical public health This area of interest provides a solid understanding of epidemiology, ecology, and control of infectious diseases in developing countries. It emphasizes control and prevention measures and the biological basis of diseases caused by pathogens that range from viruses to parasites.

Vector biology, ecology, and control This area of interest focuses on the manner in which blood-feeding arthropods interact with their various vertebrate hosts and with the human pathogens that they transmit. These interests combine biological experimentation, epidemiological analysis, and population studies. Students become familiar with the various arthropods that are associated with human disease and learn the ways environmental change may result in ill health. Students conduct studies on mechanisms of transmission of vector-borne pathogens, both in the laboratory and in the field, and devise novel intervention strategies.

Virology This area of interest is designed to prepare a future generation of experts for new developments in the pathogenesis and prevention of AIDS and other infectious diseases. At present the program emphasizes the epidemiology, biology, and vaccinology of AIDS as an example of a complex infectious disease. Students take courses in virology, vaccine development, and related fields.

DOCTOR OF PHILOSOPHY IN BIOLOGICAL SCIENCES IN PUBLIC HEALTH (Immunology and Infectious Diseases)

Students wishing to study cellular and molecular biology, immunology, virology, or physiology as it pertains to major problems in public health should apply to the PhD program offered by the Division of Biological Sciences through Harvard University's Graduate School of Arts and Sciences.

The PhD program is designed to train scientists in state-of-the-art concepts and methods in immunology, immune system disorders, virology, the biology of parasites, or important infectious diseases. Graduates ordinarily assume positions as faculty members and research scientists in graduate schools, medical schools, research institutes, or schools of public health. Career opportunities in the biological sciences as they apply to public health are expected to grow both in academia and in the biotechnology and pharmaceutical industries.

Applicants generally have a bachelor's degree and demonstrated competence in organic and biological chemistry, general biology, physics, and calculus. Those deficient in one of these areas may be admitted provisionally on the condition that appropriate courses will be taken before and/or after entering the program. Applicants are required to take both the GRE general and subject tests; these must be taken in time to meet the application deadline of December 14.

The program offers a firm foundation in the basic biomedical sciences, as well as in epidemiology and biostatistics. Specific courses, as dictated by individual research concentrations, supplement this core. Students in this program engage in laboratory rotations in three different research areas to enable them to assess realistically their interest in a thesis project and to evaluate the suitability of the laboratory and the mentor. At the completion of these rotations, students select an area of concentration and a thesis research laboratory and complete the required curriculum. A qualifying examination must be passed before engaging in thesis work, and the thesis must be defended before the granting of the PhD.

All students admitted to the PhD program receive a stipend, as well as tuition and health insurance support. Students are encouraged to apply for fellowships from outside sources since certain external fellowships provide higher stipends. While funds to support international students are limited, at least one special scholarship is available each year for a student from a

COURSES OF INSTRUCTION

Please note that courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Ecology, Epidemiology, and Control of Important Parasitic Diseases of Developing Areas

Biology, Epidemiology, Economics, and Policy: Malaria

Tuberculosis Areas

Survey of Immunobiology

Clinical and Pathologic Features of Tropical Diseases

Principles of Public Health Entomology

Immunology of Infectious Diseases

Microbiology of Public Health

Cellular and Molecular Biology of Parasites

AIDS Epidemic: Status, Dynamics, and Prospects

Design and Development of a Vaccine

Independent Study, Field Experience

RELATED OFFERINGS

Program in the Epidemiology of Infectious Disease, see page 58.

CONTACT INFORMATION

For more information about the SD program in immunology and infectious diseases or other departmental inquiries, please contact the assistant to the chair, Department of Immunology and Infectious Diseases, 651 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0975
Fax: 617-739-8348
Web: http://www.hsph.harvard.edu/Academics/iid/index.html

For application materials and information about admission to the PhD program (program 8500), please contact the Graduate School of Arts and Sciences Admissions Office, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315
Web: http://www.gsas.harvard.edu/admissions

Applicants who have specific questions about the PhD program may contact Ruth Kenworthy, administrator, Division of Biological Sciences, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4470
Fax: 617-432-4098
E-mail: rkenwort@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/Academics/dbs/bph/index.html

developing, sub-Saharan African country. A universitywide fellowship program also provides funding to qualified underrepresented minority students in the sciences.

DOCTOR OF SCIENCE IN IMMUNOLOGY AND INFECTIOUS DISEASES

The SD program is designed for those interested in immunology, molecular biology, virology, and epidemiology of infectious diseases.

The program prepares students for postdoctoral research fellowships; junior faculty positions at academic institutions; and positions in independent research institutions, governmental agencies, and the biotechnology industry.

Applicants to the SD program should have a clinical degree (MD, DVM, DMD, or equivalent). This program is also available to candidates without a clinical degree who wish to apply to the Program in the Epidemiology of Infectious Disease. To enter the program through the Department of Immunology and Infectious Diseases, candidates must have adequate background in modern biology, including microbiology.

This program aims to develop the basic skills in laboratory techniques and data handling necessary for undertaking original research. Course work during the first one or two years emphasizes cellular and molecular biology, virology, immunology, and genetics. Course work for students focusing on the epidemiology of infections also emphasizes epidemiology, biostatistics, and ecology. Required courses for all concentrations include schoolwide requirements in epidemiology and intermediate biostatistics, as well as appropriate courses for one major (20 credits) and two minor fields (10 credits each). Electives are chosen according to a student's needs and interests. As well as at HSPH, courses may be taken at Harvard Medical School, the Graduate School of Arts and Sciences, and MIT.

Students are encouraged to participate in the numerous seminar series and informal discussion groups offered on the Longwood campus. The department emphasizes publication of research results in the standard research literature, and most doctoral students publish several papers before completing the degree. Students must pass the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis based on intensive laboratory research under the guidance of a faculty adviser in the student's area of concentration. Students choose a faculty adviser whose research interests match their own when beginning to research their thesis topic.

Limited funding is available to qualified SD students who are U.S. citizens or permanent residents. A training grant from the NIH Fogarty Institute also provides some support for international students.

CHRISTOPHER *Mores*

DOCTORAL STUDENT, DEPARTMENT OF IMMUNOLOGY AND INFECTIOUS DISEASES

Christopher Mores completed his undergraduate training in biological sciences at Rutgers University in 1995; he spent the next year as a researcher in an academic surgical group at the University of Medicine and Dentistry in Camden, New Jersey. Drawn by the opportunity to combine field and lab work in his studies, Mores is now an SD candidate in the Department of Immunology and Infectious Diseases at HSPH.

"I had some experience with mosquito-borne encephalitis surveillance with the state of New Jersey as an undergraduate," Mores states, "and I had chosen to focus on eastern equine encephalitis for my thesis. But since West Nile arrived [in New England], I felt it was my responsibility to study it." Specifically Mores is looking into ways in which the virus will perpetuate and maintain itself in the greater Boston area.

When he graduates, Mores aims to continue his investigation of vector-borne and zoonotic diseases in an academic setting and may also want to teach at the graduate level.

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair (acting): Tun-Hou Lee, SM, SD. Virology of human immunodeficiency viruses; design of an HIV vaccine.

Barry R. Bloom, PhD. Mechanisms of resistance and pathogenesis of diseases, particularly tuberculosis and leprosy; genetic analysis of host resistance; genetically engineered vaccines against tuberculosis.

Barbara Burleigh, PhD. Molecular and cellular basis of *Trypanosoma cruzi*–host cell interactions; host cell invasion; signal transduction; *Trypanosoma cruzi* differentiation.

John R. David, MD. Immunology of migration inhibitory factor (MIF); biologic role using MIF-deficient mice; the biology of parasitism, focusing on leishmania; transfer of technology from bench to field.

Myron (Max) Essex, DVM, PhD. Role of retroviruses as infectious agents in AIDS; mechanisms of immunosuppression by retroviruses; African HIVs.

Laurie H. Glimcher, MD. Genetic regulation of the immune response; the role of 1a (class II) major histocompatibility complex molecules and T-cell receptor proteins in T-lymphocyte activation.

Michael J. Grusby, PhD. Molecular/genetic analysis of cytotoxic T-lymphocyte-mediated lysis; in vivo models of immune deficiency by homologous recombination in embryonic stem cells.

Donald A. Harn, Jr., AM, PhD. Regulation or direction of immune responses due to molecular composition of particular antigens; synthetic peptide and DNA vaccines for parasitic diseases.

I-Cheng Ho, MD, PhD. Molecular regulation and differentiation of GATA-3; expression of sPLA2 in the differentiation of T-cells.

Phyllis J. Kanki, DVM, SD. Pathobiology of human and simian retroviruses; characterization of the immune response to various viral antigens and their correlation to stage of infection or disease.

Igor Kramnik, MD, PhD. Immunology and immunogenetics of infectious diseases; diagnostic tools for predicting the susceptibility to tuberculosis in experimental models and human populations.

Eric J. Rubin, MD, PhD. Virulence factors of mycobacteria; acquisition of virulence determinants by *Vibrio cholerae*; generalized transposon mutagenesis systems for bacteria.

John C. Samuelson, MD, PhD. Use of molecular biological and biochemical technique to study *Entamoeba histolytica*, the protozoan parasite causing amebic dysentery.

Andrew Spielman, ScD. Epidemiology of vector-borne disease; physiology and ecology of mosquitoes and ticks; development of infectivity of pathogens in mosquitoes and ticks.

Ali A. Sultan, MB, BS, PhD. Biochemistry and molecular pathogenesis of parasites.

Dyann F. Wirth, PhD. Mechanisms of drug resistance in malaria, including molecular genetic analysis and field-based studies; genetic analysis of malaria transmission; analysis of gene expression.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

Marcia B. Goldberg, MD. Characterization of the molecular mechanism and function of unipolar localization of *Shigella* IcsA; mechanism of actin assembly by *Shigella* IcsA.

Donald A. Goldmann, MD. Epidemiology of nosocomial infections; epidemiologic approaches to medical outcomes assessment and hospital quality improvement.

Martin S. Hirsch, MD. Pathogenesis and therapy of human retrovirus and herpes virus infections.

Kenneth McIntosh, MD. Pathogenesis, prevention, and treatment of pediatric respiratory viral diseases; coronaviruses; new methods in viral diagnosis; epidemiology and pathogenesis of respiratory infections.

Joseph G. Sodroski, MD. Role of the HIV-1 envelope glycoproteins in virus entry; topological and structural analysis of the HIV-1 envelope glycoproteins; generation of HIV-1 neutralizing antibodies.

ADJUNCT FACULTY

Kenneth H. Mayer, MD. Brown University School of Medicine.

Mary E. Russell, MD. Parexel International, Inc.

THE GOAL OF THE DEPARTMENT OF MATERNAL AND CHILD HEALTH IS TO IMPROVE THE HEALTH OF WOMEN AND CHILDREN THROUGH BASIC AND APPLIED RESEARCH, THROUGH PREPARATION OF PROFESSIONALS FOR LEADERSHIP POSITIONS, AND THROUGH ADVOCACY AND COMMUNITY SERVICE.

DEPARTMENT OF *maternal & child health*

FACULTY MEMBERS IN THE DEPARTMENT OF MATERNAL and Child Health (MCH) undertake research in eight major areas: the prevention of infant mortality and morbidity (including risk factors for adverse outcomes of pregnancy, management of childbirth, and its effect on both the course of labor and neonatal outcomes); growth and nutrition (including dietary assessment methodologies for women and children, the assessment and management of toxic-substance exposures, and the impact of nutrition education interventions for low-income women in the postpartum period); children with special care needs, their identification, and the medical and educational services designed to meet these needs; adolescent health (including the origins of psychiatric morbidity, delinquency, violence, and substance abuse); women's mental health, the victimization of women, and the origins and effects of wife and child abuse; determinants of contraceptive utilization; the organization of reproductive health services in the context of health-sector reform in developing countries; the organization of health services (including studies of the planning, policy development, and performance of federal, state, and local public and private health agencies) and the evaluation of managed care and public health interventions like Healthy Start on the use of health services by women and children in the United States.

The department's academic curriculum includes courses on maternal and child health problems of public health significance; the physical, social, and cognitive stages of human development; women and health; maternal and child health services; the roles of governmental, private, and voluntary health agencies; research methods; and the methodology of program planning, policy formation, and program evaluation in maternal and child health.

DEGREE PROGRAMS IN MATERNAL AND CHILD HEALTH

As described below, the department offers both 80-credit and 40-credit master of science (SM) programs, a dual-degree master's program for nurses, and a doctoral program leading to the doctor of science (SD) or doctor of public health (DPH) degree. Students focusing on maternal and child health are expected to acquire an understanding of normative growth and development, definition and research in maternal and child health problems, maternal and child health services, legislation supporting health and social services for mothers and children, and the planning of such services.

A limited number of tuition fellowships for health professionals in the 40-credit master's degree programs (SM, MPH) and for doctoral students are available through a federally funded training grant from the Maternal and Child Health Bureau (HRSA—HHS). These traineeships require U.S. citizenship or permanent residency. Additional limited tuition support may be available for other master's and doctoral students.

MASTER OF SCIENCE IN MATERNAL AND CHILD HEALTH (80-credit and 40-credit programs)

The 80-credit SM program is designed to prepare students for midlevel positions as project analysts, service coordinators, and managers in the field of maternal and child health. Recent graduates have taken such positions as associate director of Campaign for Our Children and training coordinator for the HIV Prevention Training Center.

The 40-credit SM program is intended to prepare health professionals for research careers in public and private agencies. Recent graduates have taken such positions as director of adolescent medicine at New England Medical Center, associate director of public health and research at Georgetown University, and assistant medical director of the Rhode Island Health Department; others have gone on to earn doctoral degrees.

Applicants to the 80-credit program should have either a master's degree in a field not directly related to health (such as law, education, sociology, or statistics) or a bachelor's degree in a health-related field and at least two years of relevant work experience.

Applicants eligible for the 40-credit program are established practitioners or investigators holding prior master's or doctoral degrees in a related field such as medicine, dentistry, nursing, social work, nutrition, physical therapy, psychology, health education, or anthropology.

For the 80-credit program, at least 30 credits must be earned in departmental courses or approved courses in other departments. Students must also fulfill core requirements in biostatistics, epidemiology, environmental determinants of health, social and behavioral sciences, and health policy, planning, and administration. A minimum of 5 credits must be earned in fieldwork either during the summer between the two years or in the second academic year.

For the 40-credit program students must fulfill core requirements in biostatistics and epidemiology and must earn 20 credits in the Department of Maternal and Child Health or in approved courses from other departments.

Quantitative and evaluation methods Students in the 40-credit SM program may choose to focus on a special area of interest: quantitative and evaluation methods. This area of interest is designed to prepare health professionals for work in public and private agencies and places emphasis on quantitative methods, program evaluation, analysis of administrative data sets, and applied epidemiology. Graduating students in this area typically take positions as program evaluators/ epidemiologists for MCH agencies.

In addition to the regular requirements, this specialization includes an eight-week internship during the spring semester in an applied MCH setting, with placements typically at the Centers for Disease Control and Prevention or in state or local MCH agencies. The specialization also requires course work on screening, needs assessment, and program evaluation. The standard duration is twelve months, with course work beginning during the summer prior to the academic year; however, an accelerated nine-month program is also available.

MASTER OF SCIENCE IN MATERNAL AND CHILD HEALTH (HSPH 40-credit program) and Parent-Child Nursing (Simmons College 40-credit program)

This dual-degree program, which requires that 40 credits be earned at HSPH and 40 at Simmons, is designed to prepare nurse practitioners for leadership roles in child, youth, women's, or school health programs. Recent graduates have taken such positions as director of clinical services for the Family Planning Association of Maine and staff director for the World Health Organization's Maternal Health and Safe Motherhood Program.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Public Health Practice in Maternol ond Child Health

Physical Grawth and Develapment I and II

Analysis af Secondory Dota

Maternol ond Child Heolth Issues, Pragroms, ond Policies

Moternol and Child Heolth in Develaping Countries

Nutritionol Surveillance

Nutritian in Child Growth and Develapment

Adolescent Heolth

Services far Children with Disobilities

Persanality and Cagnitive Develapment: Applicatian ta Public Heolth

Wamen, Health, and Develapment

Developmental Disabilities I ond II

Childbirth: Health Policy and Epidemialagy

Methods of Planning and Evaluoting Public Health Pragrams

Reseorch Methods in Maternol and Child Health

Saciety ond Its Effects an Child Health

Sociol Services for Children, Adalescents, ond Families

Child and Adolescent Mental Disorders: Public Health Perspective

Gender-bosed Vialence: Origins and Remedies

Child Abuse ond Neglect: Public Heolth Perspectives

Public Heolth Genetics: Contemporory Issues and Chollenges

Cross-Cultural Issues in Child and Adolescent Heolth

Maternol ond Child Heolth Doctoral Seminar

Oral Health Policy

Leodership in Minarity Health Policy

Issues in Minority Health Policy

Clinical Effectiveness Seminar

Infant Assessment in the Context of Prenatal Exposures

Independent Study, Field Experience

RELATED OFFERINGS

MPH concentration in family and community health, see page 54.

Women, gender, and health course offerings, see page 58.

CONTACT INFORMATION

For more information about research and training in maternal and child health, please contact Patricia Lavoie, Department of Maternal and Child Health, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-3762
Fax: 617-432-3755
E-mail: tlavoie@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/Academics/mch/index.html

For more information about the Simmons College component of the dual-degree program, please call 617-521-2141.

Applicants should hold a bachelor's degree from a program accredited by the National League for Nursing, a license to practice nursing, and the equivalent of at least three years of full-time nursing experience. International nurses with equivalent backgrounds are eligible to apply. Applicants must meet the general admission requirements of both HSPH and Simmons College.

Students enroll in half-time study at both Simmons College and HSPH for two academic years, in addition to studying at Simmons for one summer session. The curriculum of the HSPH portion of the program is the same as that for the 40-credit SM program. Continued matriculation is dependent on maintaining satisfactory academic progress in both programs.

DOCTOR OF SCIENCE IN MATERNAL AND CHILD HEALTH/DOCTOR OF PUBLIC HEALTH

The doctoral programs are designed to prepare public health professionals for research careers in academic institutions, public and private health agencies, and leadership roles in national and international organizations. Recent graduates have taken such positions as scientist/study director at the National Academy of Sciences and faculty positions in universities.

Applicants must have an advanced degree in a health field related to maternal and child health. They are expected to have a sound academic record with documented proficiency in the quantitative sciences, relevant work experience, and research interest in an area consonant with the goals of the department. Applicants to the DPH program must hold an MPH degree.

Doctoral candidates must spend two years in residence completing core requirements in biostatistics and epidemiology and course work leading to a major (20 credits) in maternal and child health and minors (10 credits each) in two other fields. Students must pass the departmental written examination and the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis based on independent research.

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair: Marie C. McCormick, MD, ScD. Infant mortality; outcomes of high-risk neonates and interventions to ameliorate adverse outcomes.

Iain W. Aitken, MB, BChir, DCMT, MPH. Maternal health care; management of primary health care workers; design and financing of urban health care systems in developing countries.

Mary Jean Brown, SM, SD. Housing factors, particularly lead poisoning, and their impact on children's health.

Stephen L. Buka, SM, SM, SD. Causes and prevention of behavioral and developmental disorders of children.

Felton J. Earls, MD. Longitudinal research to understand how community, family, and individual factors influence delinquent and criminal behavior.

Michael L. Ganz, MS, MPhil, PhD. Relationship between socioeconomic factors, behaviors, ecologic factors, and maternal and child health measures.

Laura A. McCloskey, PhD. Origins and sequelae of wife and child abuse; family origins of child psychopathology; women's mental health and victimization; posttraumatic stress.

Karen E. Peterson, RD, SD. Epidemiology of malnutrition in industrialized and developing countries.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

Allen C. Crocker, MD. Chronic illness and developmental disabilities in children; mechanisms of disability.

Barbara Gottlieb, MD, MPH. Unintended pregnancy; cervical cancer; minority and community health; HIV risk and prevention; adolescent and school health.

Charles J. Homer, MD, MPH. Application of epidemiologic methods to assess the effectiveness of health care services.

Ellice S. Lieberman, MD, MPH, DPH. Perinatal epidemiology; risk factors for adverse pregnancy outcomes; assessment of new technologies and care practices in obstetrics.

Eli H. Newberger, MD, SM. Child abuse and family violence.

Judith S. Palfrey, MD. Development of preschool children; interface of health and educational services for children.

Joan Y. Reede, MD, MPH, SM. Biomedical manpower and academic/research career development; health services to/impact of health policy on minority and other populations.

Douglas K. Richardson, MD, MBA. Impact of variations in practice styles on outcomes, resource use, and costs of neonatal intensive care.

Benjamin P. Sachs, MD, BS, MRCS, LRCP, DPH. Epidemiology and health policy relating to women and children in technological evaluation, infant mortality, and medical services.

Edward C. Tronick, MS, PhD. Neurodevelopment of infants and children exposed to drugs in utero; depressive symptoms and mother-infant interaction.

ADJUNCT FACULTY

Robin J. R. Blatt, Dip. Nursing, MPH. Massachusetts Department of Public Health.

Johanna T. Dwyer, SM, SM, SD. Stern Nutrition Center, Tufts Medical Center.

Marie P. Farrell, MS, MSN, EdD, MPH. University of Wisconsin.

William T. Garrison, MA, PhD. University of Massachusetts Medical School.

David T. Helm, MA, PhD. Sociology Department, Boston University; Children's Hospital.

Daniel J. Kindlon, MS, PhD. Pennsylvania State University College of Medicine.

Lawrence C. Kleinman, MD, MPH. Pennsylvania State University College of Medicine.

John W. Kulig, MD, MPH. Tufts University School of Medicine.

Beat Mohler, MD, Dr MED. University of Basil, Switzerland.

Norma M. Swenson, MPH. Consultant.

Deborah K. Walker, EdM, EdD. Bureau of Family and Community Health, Massachusetts Department of Public Health.

ALLISON *Barker Morse*

MASTER'S STUDENT, DEPARTMENT OF MATERNAL AND CHILD HEALTH

A registered nurse with a bachelor of science from Georgetown University School of Nursing, Allison Morse is in a joint program combining a master of science from the Department of Maternal and Child Health at HSPH and a master of science in nursing from Simmons Graduate School for Health Studies. She is also a student representative to the MCH Section of the American Public Health Association.

Before joining the dual-degree program, Morse worked as an in-patient nurse treating women's cancers at Massachusetts General Hospital. Seeking an environment that addressed both women's health and public health issues, she then became involved in quality improvement at a local domestic violence agency. Her current research, which focuses on nurse practitioners' perceived barriers to screening for intimate partner violence, springs from that involvement.

Looking forward, Morse says, "I'd love to be able to balance my clinical and health policy interests. I'd like to both see patients in a primary care setting and continue working on women's health issues."

THE MISSION OF THE DEPARTMENT OF NUTRITION IS TO IMPROVE HUMAN HEALTH THROUGH ENHANCED NUTRITION. THE DEPARTMENT STRIVES TO ACCOMPLISH THIS GOAL THROUGH RESEARCH AIMED AT IMPROVED UNDERSTANDING OF HOW DIET INFLUENCES HEALTH, THE DISSEMINATION OF NEW KNOWLEDGE ABOUT NUTRITION TO HEALTH PROFESSIONALS AND THE PUBLIC, THE DEVELOPMENT OF NUTRITIONAL STRATEGIES, AND THE EDUCATION OF RESEARCHERS AND PRACTITIONERS.

DEPARTMENT OF *nutrition*

THE DEPARTMENT OF NUTRITION PROVIDES TRAINING AND research opportunities in basic science relating to nutrition and in epidemiologic aspects of nutrition as they affect public health. Nutrition policy and the evaluation of nutritional interventions are long-standing interests of the department, particularly as they concern the populations of Latin America, Africa, Asia, and the United States. Interests of the department range from molecular biology to human studies of cancer and heart disease. Students learn and use the latest techniques in biochemistry, physiology, biostatistics, epidemiology, and related fields. Departmental research, whether basic or applied, is relevant to human health.

Current research covers a wide range of topics, including large prospective studies of dietary factors in relation to heart disease, cancer, diabetes, and ophthalmologic disease; development of methods to assess nutritional status by analysis of body tissue; the interaction of nutritional factors with genetic determinants of disease; the interaction of nutritional factors and infectious agents; nutritional influence on blood pressure; effects of nutrition programs on the mental and physical consequences of malnutrition; nutritional determinants of blood lipid factors; lipoprotein metabolism; molecular mechanisms of diabetes and obesity; regulation of the intra- and intercellular delivery of macromolecular nutrients; and the molecular mechanism leading to atherosclerosis and thrombosis.

TANUJA *Rastogi*

DOCTORAL STUDENT, DEPARTMENT OF NUTRITION

Tanuja Rastogi came to HSPH in 1996 as a doctoral candidate with a bachelor of science in biology from the University of Maryland, a master's degree in nutritional epidemiology from Tufts University, and an interest in studying chronic diseases in developing countries. As part of her master's degree, while interning at the Nutrition Foundation of India, Rastogi conducted a health survey to assess the prevalence of obesity among working women in New Delhi.

For her doctoral thesis Rastogi designed and conducted a multicenter epidemiologic case-control study, assessing risk factors for coronary heart disease among adults within eight hospitals in New Delhi and Bangalore, India. Through her research Rastogi has developed an appreciation for chronic disease prevention and control in poorer nations. "In countries where resources are limited, it is important to focus on prevention through the modification of lifestyle habits, including smoking cessation, improvements in physical activity, and healthier diets," she says.

Rastogi will be joining the World Health Organization in Geneva for a short period and then plans to continue her work in developing countries.

COURSES OF INSTRUCTION

Please note that courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Principles of Nutrition

Science of Human Nutrition

Nutrition Seminars I and II

Advanced Topics in Nutrition I ond II

Scientific Writing in Nutrition and Epidemiology

Seminors in Food Science and Technology

Nutritional Problems of Less-Developed Countries

Nutrition and Heart Diseose

Research Techniques in Nutritionol Biochemistry

Nutritional Epidemiology I and II

Molecular Biology Loborotory Techniques

Nutrition/Health Promotion in the Moss Medio

Independent Study, Field Experience

RELATED OFFERINGS

Interdisciplinary Program in Molecular Epidemiology, see page 58.

MPH concentration in family and community health, see page 54.

DEGREE PROGRAMS IN NUTRITION

As described below, the department offers two doctoral programs. The first is a doctor of philosophy (PhD) program in biological sciences in public health (nutritional biochemistry/cardiovascular biology). The second is a program in nutritional epidemiology/international nutrition leading to the doctor of science (SD) or doctor of public health (DPH) degree in nutrition. Applicants for the nutritional biochemistry/cardiovascular biology program who hold a clinical degree in medicine, veterinary medicine, or dentistry may prefer to follow a different curriculum leading to the SD degree in nutritional biochemistry. This option may be available by special arrangement with the department.

DOCTOR OF PHILOSOPHY IN BIOLOGICAL SCIENCES IN PUBLIC HEALTH (Nutritional Biochemistry/Cardiovascular Biology)

Students wishing to study cellular and molecular biology or physiology as it pertains to major problems in public health should apply to the PhD program offered by the Division of Biological Sciences through Harvard University's Graduate School of Arts and Sciences.

Some graduates have assumed positions as faculty members and research scientists at medical schools, research institutes, and schools of public health; others have gone on to careers as public health nutritionists in international organizations or federal, state, or local governments. Career opportunities in the bio-

CONTACT INFORMATION

For more information about research and training in nutrition, please contact Kathy McLoughlin, Department of Nutrition, 655 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1851
Fax: 617-432-2435
E-mail: nutrition@hsph.harvard.edu

For application materials and information about admission to the PhD program (program 8500), please contact the Graduate School of Arts and Sciences Admissions Office, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315
Web: http://www.gsas.harvard.edu/admissions

Applicants who have specific questions about the PhD program may contact Ruth Kenworthy, administrator, Division of Biological Sciences, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4470
Fax: 617-432-4098
E-mail: rkenwort@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/Academics/dbs/bph/index.html

logical sciences as they apply to public health are expected to grow both in academia and in the biotechnology and pharmaceutical industries.

Applicants to the PhD program generally have a bachelor's degree and demonstrated competence in organic and biological chemistry, general biology, physics, and calculus. Those deficient in one of these areas may be admitted provisionally on the condition that appropriate courses will be taken before and/or after entering the program. Applicants are required to take both the GRE general test and at least one science-subject test; these must be taken in time to meet the application deadline of December 14.

The PhD program in nutritional biochemistry offers rigorous training in biochemistry, cell biology, and metabolism, allowing students to work toward solving nutritional and metabolic problems in the laboratory. Students in cardiovascular biology learn to use cutting-edge technologies from molecular biology, biochemistry, and genetics to critically dissect the mechanisms underlying cardiovascular diseases such as heart attacks, strokes, heart failure, atherosclerosis, and congenital heart disease. Both areas also offer a firm foundation in epidemiology and biostatistics. Specific courses, as dictated by individual research concentrations, supplement this core. Students engage in laboratory rotations in three different research areas to enable them to assess realistically their interests in a thesis project and to evaluate the suitability of the laboratory and the mentor. At the completion of these rotations, students select an area of concentration and a thesis research laboratory and complete the required curriculum. A qualifying examination must be passed before engaging in thesis work, and the thesis must be defended before the granting of the PhD.

All students admitted to the PhD program receive a stipend, as well as tuition and health insurance support. Students are encouraged to apply for fellowships from outside sources since certain external fellowships provide higher stipends. While funds to support international students are limited, one special scholarship is available each year for a student from a developing, sub-Saharan African country. A universitywide fellowship program also provides funding to qualified underrepresented minority students in the sciences.

DOCTOR OF SCIENCE IN NUTRITION/DOCTOR OF PUBLIC HEALTH

The program in nutritional epidemiology/international nutrition leading to the SD or DPH degree provides rigorous training in epidemiology and biostatistics as well as the biological aspects of nutrition. The overall objective is to enable students to investigate relationships between diet and disease.

Graduates are prepared for careers as research scientists in academic institutions and in public- and private-sector organizations. Recent graduates are now working at universities, research foundations, pharmaceutical companies, the National Cancer Institute, and the American Cancer Society.

Applicants must have a strong background in biology and mathematics. An MD or other professional health-related degree is desirable but not required. Applicants to the DPH program must hold an MPH degree. Admission to a joint program with Epidemiology requires the approval of both departments, and applicants should contact the Department of Nutrition before making formal application.

The program includes formal course work, a practical research project, a seminar, and a thesis research project. Students must pass the departmental oral comprehensive examination and the schoolwide oral qualifying examination; adhere to the doctoral timetable for maintaining satisfactory progress; and complete, defend, and submit a thesis. In addition to fulfilling the schoolwide doctoral requirements in introductory epidemiology and intermediate biostatistics, students must complete a major (20 credits) in nutrition and two minors (10 credits each), one of which must be epidemiology. Students in a joint program with the Department of Epidemiology must satisfy the course requirements of both departments, select a minor field acceptable to both departments, and write a thesis on a topic concerning both nutrition and epidemiology.

For the SD and DPH programs, funding may be available through the NIH-supported Training Program in Nutritional Science for students with previous doctoral degrees.

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Department chair: Walter C. Willett, MD, MPH, DPH. Investigation of dietary factors, using epidemiological methods, in the cause and prevention of cardiovascular and other diseases.

Alberto Ascherio, MD, MPH, DPH. Relation of dietary factors to cardiovascular and neurological diseases; nutritional epidemiology of multiple sclerosis and Parkinson's disease.

Hannia Campos, MS, PhD. Dietary and genetic factors affecting lipoprotein metabolism and heart disease in humans; biochemical markers of dietary intake.

Wafaie W. Fawzi, MB, BS, MPH, SM, DPH. Etiologies of infectious diseases with emphasis on dietary and nutritional causes; relationships of dietary factors to disease in pregnancy and childhood.

Gökhan S. Hotamisligil, MD, PhD. Molecular basis of metabolic diseases; studies on regulatory pathways; signal transduction in mammalian cells; biology of fatty-acid binding proteins.

Frank B. Hu, MD, MPH, PhD. Diet and physical activity in relation to cardiovascular disease and type-2 diabetes; role of diet and lifestyle in preventing macrovascular complications in diabetics.

David J. Hunter, MB, BS, MPH, SD. Use of biomarkers in epidemiological studies to resolve questions about disease susceptibility and etiology; cancer; cardiovascular disease; HIV.

Karen E. Peterson, RD, SD. Epidemiology of malnutrition in industrialized and developing countries; methodological issues affecting interpretation of growth and nutrition indicators.

Guy L. Reed III, MS, MD. Elucidation of molecular processes leading to cardiovascular disease and stroke; identification of genetic polymorphisms that alter disease risk.

Eric B. Rimm, SD. Relation of diet to diseases, especially obesity, diabetes, and cardiovascular disease; impact of antioxidants, B vitamins, fiber, and alcohol on serum and genetic markers.

Frank M. Sacks, MD. Human lipoprotein metabolism; effects of diet and hormones; dietary fatty acids and cardiovascular disease.

Meir J. Stampfer, MD, MPH, DPH. Influence of diet and exogenous hormones on health, particularly heart disease and cancer.

Marianne Wessling-Resnick, MS, PhD. Regulation of the cellular uptake of macromolecular nutrients; molecular basis of iron transport.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School)

Christopher P. Duggan, MD, MPH. Oral rehydration solutions for acute diarrhea; nutritional requirements of catabolic patients; micronutrient needs in infectious and critical illness.

Mathew W. Gillman, MD, SM. Relationship of diet to chronic conditions and diseases; early-life prevention of adult chronic disease; disease prevention in defined populations.

Edward L. Giovannucci, MD, MPH, SD. Study of diet and occurrence of cancers, particularly of the colon and prostate.

Clifford W. Lo, MD, MPH, ScD. Vitamin D and calcium nutrition; total parenteral nutrition.

W. Allan Walker, MD. Nutrition and developmental gastroenterology; nutrition and mucosal immunology; gastrointestinal immunology; gastroenterology protective functions of breast milk.

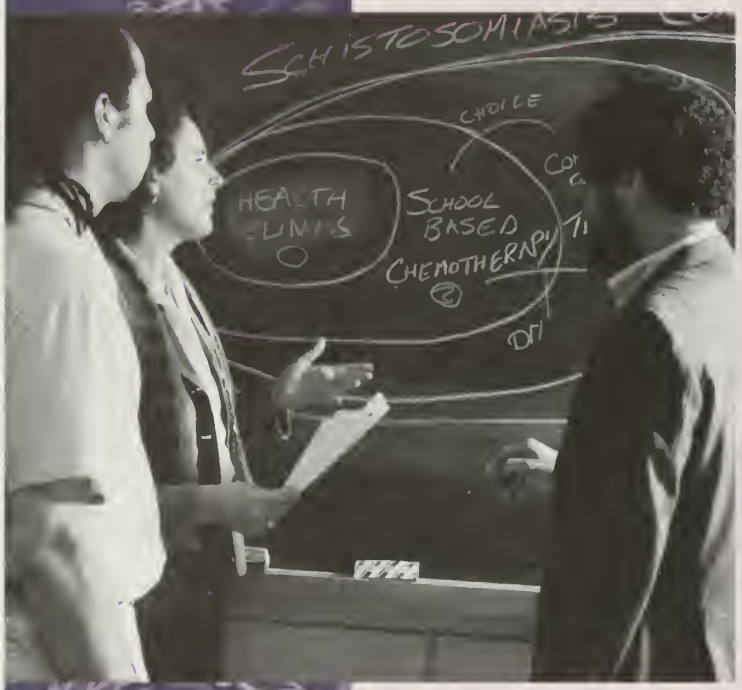
ADJUNCT FACULTY

Jeffrey M. Leiden, PhD, MD. Abbott Laboratories, Chicago, IL.

THE DEPARTMENT OF POPULATION AND INTERNATIONAL HEALTH SEEKS TO IMPROVE GLOBAL HEALTH PROBLEMS THROUGH EDUCATION, RESEARCH, AND SERVICE FROM A POPULATION-BASED PERSPECTIVE.

DEPARTMENT OF

population & international health



THE TWENTY-FIRST CENTURY HAS ARRIVED WITH COMPLEX changes in demographic patterns, disease burdens, and health policies. These changes are affecting all societies, rich and poor, developed and developing. The department's approach to these problems combines the analysis of population and health intersections using quantitative and qualitative methods, the investigation of real-world policies that affect health, and a concern with the political economy of health and development.

The department's members generate knowledge and ideas through their research, strengthen technical and leadership skills through educational programs, and enhance national capacities through collaborative projects, especially in developing countries. Drawing on anthropology, demography, ecology, economics, epidemiology, ethics, medicine, political science, reproductive biology, and sociology, department faculty members apply their disciplinary expertise to population and international health issues. The department's research interests span a wide spectrum of topics, including social and economic development, health policy, and demography; design and financing of health care systems; women's health, reproductive health, and children's health; and prevention and control of infectious and chronic diseases. The department has a special concern with questions of health equity and human rights, particularly in relation to health and population issues in developing countries.

Students in the department come with various backgrounds. Many students are from developing countries. All have an interest in the health of disadvantaged populations worldwide.

DEGREE PROGRAMS IN POPULATION AND INTERNATIONAL HEALTH

As described below, the department offers both an 80-credit master of science (SM) program and a program leading to the doctor of science (SD) or doctor of public health (DPH) degree. In addition to these programs, the department hosts research fellows and midcareer leaders in population and health research and undertakes cooperative technical projects overseas.

MASTER OF SCIENCE IN POPULATION AND INTERNATIONAL HEALTH

The department's SM program offers two tracks, each comprising 80 course credits, geared toward preparing individuals for academic and public service careers, respectively.

Students on the academic track generally continue with doctoral work at the end of the master's program; their eventual aim is to work as researchers in academic institutions. Graduates of the professional track pursue a variety of careers in national and international agencies and institutions.

Applicants in both tracks must hold a bachelor's degree or equivalent, though many students already hold advanced degrees in medicine or a social science discipline. The program strongly prefers applicants with relevant work experience in population or international public health.

In both tracks the courses and the thesis work are based on practical aspects of current health and population issues in developing countries and at the same time introduce students to the major theoretical issues in international health and population. In addition to meeting school requirements in biostatistics and epidemiology (and, for professional students, in environmental health, health services administration, and social and behavioral sciences), students acquire a grounding in the concepts and tools used for field survey work, experience with data analysis and qualitative research methods, and familiarity with the classic literature in population and international public health.

The first year of study is devoted to full-time course work. During the summer between the first and second years, students are encouraged to gain practical experience by undertaking an internship. The second year generally involves a combination of course work and independent research linked to completion of a required master's thesis, which is usually based on the summer internship experience. The thesis provides an opportunity for the student to bring together the conceptual models and analytic skills presented in the courses and to apply them to a single issue. For students continuing into a doctoral program, the thesis often forms the core of the research proposal for more advanced work.

No concentrations are offered at the master's level.

DOCTOR OF SCIENCE IN POPULATION AND INTERNATIONAL HEALTH/DOCTOR OF PUBLIC HEALTH

The doctoral programs are designed to prepare students both for professional leadership positions in the public or private sectors of public health and for academic careers in universities or research institutions. Recent graduates have taken positions with the Centers for Disease Control and Prevention, the World Bank, nongovernmental organizations, and postdoctoral and teaching positions with universities in the United States and around the world.

Desired applicants have outstanding academic records, substantial relevant experience in the international public health arena, and professional interests that correspond to one of the department's three doctoral concentrations: population and reproductive health, international health policy and economics, and international health epidemiology and ecology. Applicants to the DPH program must hold an MPH degree. Though not required for the SD program, a master's degree is strongly recommended. Students are encouraged to enter the department's 80-credit master's degree program and apply to enter the doctoral program at a later date. Entry to the doctoral program will then depend upon outstanding performance in the master's degree program and acceptance through the regular doctoral program admission process.

Two academic years of full-time residence at the graduate level are required. The first year is ordinarily devoted to course work. The second year usually involves both course work and research planning. Subsequently additional courses are taken to fulfill remaining requirements and/or to gain special skills related to thesis research. The pace of progress depends largely on the student's individual plan, which is designed in collaboration with an adviser and thesis committee. Ultimately students must demonstrate detailed knowledge and understanding of a major field (20 credits) and two minor fields (10 credits each); pass both the departmental written examination and the schoolwide oral qualifying examination;

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change and some courses are offered in alternate years. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Papulatian and Heolth

Populotion, Health, and Develapment

Computer Methads far Demagraphy and Internotianal Health

Disaster Management

Complex Humanitarian Emergencies Research Seminar

Manogement Cantral in Heolth Orgonizotions

Health, Human Rights, and the Internotianol System

Health and Human Rights: Cancepts and Methods for Public Health

Develapment and Human Rights

Intraduction to Demographic Methods

Fertility Anolysis

Measuring Populatian Health

Epidemialagy of the Fomily

Bialagicol and Clinical Faundotians of Repraductive Heolth

Maternal and Perinatal Health in Developing Cauntries

Family Planning and Sexually Tronsmitted Infectians in Develaping Cauntries

Manogement af Reproductive Health Pragroms

Political Ecanamy of Internotianal Heolth Palicy

Health Planning in Developing Countries: Cost-Effective Anolysis and Priarity-Setting Techniques

Health Sector Refarm: A Warldwide Perspective

Populotian and Development Palicies: A World af Cantentian

Epidemiology af Infectiaus Diseases af Public Heolth Importance in Develaping Cauntries

Evaluotian of Health Interventions in Develaping Cauntries

Human Ecalagy

Implementation af Health Palicies in Low- and Middle-Income Countries

New ond Resurgent Diseose

Frontiers of Knowledge in HIV/AIDS Prevention, Care, and Reseorch

Mothemotical Models in Biology and Public Heolth

Gront Writing for Funding of Reseorch ond Heolth Core Projects

Ethicol Issues in Internotionol Heolth Reseorch

HIV/AIDS in Developing Countries: Epidemiology ond Nationol Responses

Populotion Ethics

Approoches to Complexity, Emphasizing Quolitotive Mothemotics Applied to Public Heolth ond Ecologicol Systems

Biostotistics for Internotionol Heolth

Independent Study, Field Experience

RELATED OFFERINGS

MPH concentration in international health, see page 54.

Program on the Epidemiology of Infectious Disease, see page 58.

TRONG Thanh-Hoang Ao

MASTER'S STUDENT, DEPARTMENT OF POPULATION AND INTERNATIONAL HEALTH

Born in Vietnam and raised in Los Angeles, Trong Ao did his undergraduate work in biology at the University of California, Riverside. He was drawn to HSPH by its strong Department of Population and International Health and a desire to experience life on the East Coast.

After graduating from college, Ao worked as a Peace Corps volunteer in Zimbabwe, one of the countries hardest hit by the AIDS epidemic. "It's hard to ignore a problem when it was in your face for two years and when it affected so many people you know," he says. "I was a school teacher, and some of my students' parents passed away because of a 'long illness,' which is often a euphemism for AIDS. I decided that this problem will not go away on its own. That is why I chose to be involved in the fight."

Ao expects to graduate in June 2002 and aspires to work for an nongovernmental organization abroad. While he doesn't know exactly what he will be doing, he adds, "The Peace Corps has taught me to be flexible and to expect the unexpected.... Anything is possible."

adhere to the doctoral timetable for maintaining satisfactory progress; and prepare, defend, and submit a thesis based on original research.

The major field must be chosen from one of the concentrations offered by the department, as described below. Minor fields may also be chosen from the department or from allied departments of the school or university, including the Departments of Biostatistics, Epidemiology, Health and Social Behavior, Immunology and Infectious Diseases, Nutrition, or Maternal and Child Health. The departmental concentrations promote skill development, encourage multidisciplinary approaches to health problems, and provide opportunities for extensive linkages in diverse field settings in Africa, Asia, or Latin America.

International health epidemiology and ecology This concentration is designed for students who wish to take a broad, integrated approach to researching health problems and to developing the methods for such study. Students acquire an understanding of health as part of the relationships between people and between humans and nature in the contexts of evolution, environmental change, infectious disease ecology, economic development, and demography. Through this process students gain skills to identify the determinants, consequences, and dynamics of health problems and learn to plan, implement, and evaluate health promotion and disease prevention strategies and programs.

The epidemiologic component of this concentration emphasizes the application of the combination of ecological, population-genetic, and evolutionary theories with qualitative mathematical methods on international patterns of health and disease. The ecological aspect of the curriculum focuses on health aspects of ecology and the inseparability of social and biological aspects of human ecology. Students also acquire in-depth knowledge of a sampling of major disease problems, ecological habitats, and health programs.

International health policy and economics
This concentration is designed for students who wish to develop skills and pursue research on health policy in developing countries. The concentration provides a balance of training in politics and economics and the substantive knowledge necessary to carry out doctoral research in the area of international health policy. Students complete required course work in politics, economics, international health, and policy analysis. According to their research interests students may elect to take specialized courses in political economy, the politics of development, comparative politics, international relations, microeconomic theory, econometrics, cost-effectiveness and cost-benefit analysis, and development economics.

Population and reproductive health This concentration is designed for students who are interested in the interdisciplinary study of human fertility, health, and mortality and who desire a population-based perspective on the changing patterns of mortality and morbidity worldwide. A core curriculum provides students with the basic skills to measure demographic and health trends and to understand how fertility, mortality, age structure, and reproductive health are inextricably linked. Students become familiar with the global and regional components of reproductive health, its determinants, and consequences. International and local policies, as well as services for promoting family planning, reproductive health, and family health, are examined and their effects evaluated.

The concentration stresses a population-based approach to international health issues. Comparative analysis is used to highlight disparities, similarities, and differences between developed and developing countries' experiences and between different social classes within a single population. There is a strong emphasis on field methods and practical aspects of data collection, analysis, and presentation. Though faculty members are drawn from a variety of disciplinary backgrounds, all have close contact with contemporary population and reproductive health problems in developing countries.

Faculty research in this concentration includes the design and use of qualitative and quantitative methods for the study of reproductive mortality and morbidity; infertility and its determinants and consequences; the fertility transition in poor countries; the design and evaluation of family planning and reproductive health services; gender-based perspectives and differentials in fertility, health, and mortality; intergenerational relations in developing countries; and policy reform following the 1994 Conference on Population and Development.

This concentration has strong regional interests in South and East Asia, sub-Saharan Africa, North Africa, and the Arab world.

BIO- AND PUBLIC HEALTH MATHEMATICS

Several departments offer courses designed to promote research and education in mathematics as applied to scientific problems in public health and medicine. The Committee on Bio- and Public Health Mathematics has compiled a list of courses teaching the development or implementation of mathematical tools in public health research.

TAKEMI PROGRAM IN INTERNATIONAL HEALTH

The Takemi Program is a nondegree program offering fellowships for research and advanced training on critical issues of international health, especially those related to developing countries. The program is interdisciplinary in nature and addresses problems of mobilizing, allocating, and managing scarce resources to improve health, and of designing strategies for disease control and health promotion. The research interests of fellows are usually related to a policy problem in their own country.

Takemi fellows are professionals and scholars from around the world with training and experience in public health, medicine, economics, policy analysis, biological science, and other fields. The program enables individuals in the early or middle stages of their careers to strengthen their knowledge and skills in health, economics, epidemiology, political analysis, or other analytic methods. It is not designed for projects with biomedical laboratory requirements.

The program can fund a limited number of fellowships each year and can assist in identifying external sources of funding, which applicants are encouraged to pursue.

CONTACT INFORMATION

For more information about research and training in population and international health, please contact the Education Office, Department of Population and International Health, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-2253
Fax: 617-566-0365
E-mail: ajaimung@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/Academics/pih/index.html

For more information about courses related to Bio- and Public Health Mathematics, please contact Tamara Awerbuch, PhD, Department of Population and International Health, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-2505
Fax: 617-566-0365
E-mail: tamara@hsph.harvard.edu

For more information about the Takemi Program in International Health, please contact Michael R. Reich, PhD, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0686
Fax: 617-432-1251
E-mail: takemi@hsph.harvard.edu

DEPARTMENT FACULTY

Please note that some faculty members may be on leave during academic year 2001–02.

Iain W. Aitken, MB, Bchir, DCMT, MPH. Maternal health care; management of primary health care workers; design and financing of urban health care systems in developing countries.

Peter A. Berman, MSc, PhD. Health care financing in developing countries; economic assessment of health policies and programs.

Barry R. Bloom, PhD. Mechanisms of resistance and pathogenesis of diseases in developing countries, particularly tuberculosis and leprosy; genetic analysis of host resistance; development of genetically engineered vaccines against tuberculosis.

David E. Bloom, MA, PhD. Applied microeconomics: labor, population, health, development, and environment; demography.

Thomas J. Bossert, MA, PhD. Health policy in developing countries, especially in Latin America, Africa, and Indonesia.

Paul H. Campbell, MPA, SD. Financial management, strategic planning, and reimbursement systems; health services in developing countries.

Richard A. Cash, MD, MPH. Development of health systems for rural and urban populations in developing countries.

Arthur J. Dyck, AM, PhD. Concepts of human rights, including ethical issues.

Sofia M. Gruskin, JD, SD. Health and human rights; gender, reproductive, and sexual health; global implications for the rights of the child to health; links between HIV/AIDS, health, and human rights.

Joseph J. Harrington, AM, PhD. Water resources planning and quality management; environmental monitoring and control systems; applied statistics for modeling; management for tropical disease control.

Allan G. Hill, PhD, diploma in demography. Demography of the Middle East and West Africa; impact on mortality of child survival programs; modern contraception and reproductive health.

Saidi H. Kapiga, MD, MPH, SD. Development and assessment of community-based HIV/STD control programs; development and testing of interventions to reduce perinatal transmission of HIV; determinants of fertility, provision of family-planning services, and cervical cancer.

Ulla M. Larsen, MA, PhD. Interface of demography and health; sterility and reproductive health; focus on Africa.

Jennifer Leaning, SM, MD. Medical human rights and international law; complex humanitarian emergencies; medical triage in war and disasters; environmental effects of war.

Richard Levins, PhD. Human ecology; viability of populations and environments; special interest in Caribbean region.

Yuanli Liu, MD, MPH, SM, PhD. Equity in health care; health care financing in developing countries; Chinese health care system; interaction of health and social security systems.

Ajay Mahal, MS, PhD. Macro implications of the AIDS epidemic; implications of rationally guided behavior for HIV transmission; impact of decentralization on effectiveness of health services delivery.

Stephen P. Marks, diplôme, PhD. Human rights and international affairs.

Marc D. Mitchell, MD, MS. Management of health care programs in developing countries.

Carla M. Obermeyer, MA, MSc, SD. Cultural context of health and reproduction; reproductive health care in North Africa; demography of Arab countries; population policies in the Middle East; cultural construction and management of menopause in Morocco and Lebanon.

M. Omar Rahman, MD, MPH, SD. Healthy aging in rural societies; determinants of pregnancy outcomes in developing countries; assessment of adult health status and international comparisons of gender differences; assessment of quality of health care services; socioeconomic determinants of adult health.

Michael R. Reich, AM, PhD. Political economy of health and development; health consequences of development policy; health policy in Japan.

Joseph Sevilla, AM, PhD. Effect of health improvements on economic growth and well-being; determinants of child mortality; most effective means of reducing child mortality.

Grace Wyshak, SM, PhD. Biostatistical and demographic methods; women's reproductive health.

Chi-Man (Winnie) Yip, PhD. Application of economic models and econometric techniques to study of health care policies.

SECONDARY APPOINTMENTS

(primary appointments at Harvard Medical School or Kennedy School of Government)

Sheila Sen Jasanoff, MA, PhD, JD. Comparative study of biotechnology in Britain, Germany, and the United States.

Mary E. Wilson, MD. Infections acquired during travel and residence in tropical and developing countries.

ADJUNCT FACULTY

John C. Caldwell, PhD. Department of Demography, Australian National University.

Adetokunbo O. Lucas, MD, SM. Consultant.

Christopher J. L. Murray, MD, DPhil. World Health Organization.

Amartya K. Sen, MA, PhD. Trinity College, Cambridge University.

Gita Sen, MA, PhD. Indian Institute of Management, Bangalore.

INTERDISCIPLINARY

programs

MASTER OF PUBLIC HEALTH PROGRAM

THE MASTER OF PUBLIC HEALTH (MPH) DEGREE IS THE most widely recognized professional credential for leadership in public health. The program emphasizes active, student-directed learning, problem solving, and the acquisition of skills essential to the practice of public health. The program is organized around seven career-oriented concentrations; in addition to the common core curriculum, each concentration offers specialty electives and a selection of areas of interest, allowing students to explore in depth one or more spheres of particular relevance to their career goals. The concentrations and areas of interest also enable students in the interdisciplinary MPH program to establish a second "home" in one of the school's academic departments, such as Health Policy and Management or Maternal and Child Health.

Coming from all parts of the world, MPH students bring to the program a wide variety of backgrounds and experiences. The majority of these students are midcareer professionals preparing for advancement in their organizations or for transition into new fields. Most hold a professional degree in medicine, nursing, veterinary medicine, or law. Some hold a doctoral degree in a field related to public health, such as biology, behavioral sciences, or other natural and social sciences. Individuals with a master's degree in a field closely related to public health and at least three years of relevant work experience can also be admitted to the program.

Students enrolled in MD, DMD, or DDS programs (and some law students already holding an advanced degree) and who have a career interest in public health and/or preventive medicine are eligible to apply for admission to the MPH program. These students undertake the MPH program while on leave of absence between the third and fourth year of medical or dental school. They receive the MPH degree upon successful completion of both programs and conferral of the doctoral degree. The MPH program serves as a required academic year for residency training in preventive medicine, aerospace medicine, or occupational and environmental medicine.

COURSES OF INSTRUCTION

Please note that the courses listed are subject to change. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Ethical Basis of the Practice of Public Health

Practice of Health Care Management

Introduction to the Practice of International Health

Practice of Occupational Health

Practice of Family and Community Health

Practice of Quantitative Methods

Summer MPH Practicum and Culminating Experience

Field Study, Experience

RELATED OFFERINGS

MOH program, see page 16.

Occupational and Environmental Medicine Residency, see page 17.

Summer Program in Clinical Effectiveness, see page 60.

Summer Session for Public Health Studies, see page 61.

MPH students are required to complete a minimum of 40 course credits and must fulfill core requirements in the fundamental public health disciplines. These requirements include an interdisciplinary course on the ethical basis of the practice of public health, the practice course for the chosen concentration, one course in biostatistics, one course in epidemiology, one course in environmental health, one course in health and social behavior, and 2.5 to 5 credits in management courses relevant to the chosen concentration. Requirements and concentration guidelines are available from the MPH office. Within one of the seven concentrations, applicants choose a second tier of recommended or required courses. Beyond the program and concentration requirements, students are encouraged to consult with faculty advisers to choose elective courses best suited to their needs.

MPH candidates may complete the requirements for the degree on a full-time or part-time basis (or may change from one status to the other). Full-time students normally complete the program in two semesters (September through May). Part-time students complete the requirements for the degree over a period of two or three years. Students in the quantitative methods or clinical effectiveness concentrations may apply for the summer MPH program, which can be completed by taking courses in three consecutive enrollments in the Summer Session for Public Health Studies. Students wishing to apply for the summer MPH in quantitative methods or clinical effectiveness must observe the same admissions deadlines as all MPH degree applicants.

Concentration goals and areas of interest are described below:

Clinical effectiveness Concerned with identifying the most appropriate, ethical, and cost-effective means of providing health care through prevention, early detection, or treatment, the concentration is designed to provide the analytic and quantitative training necessary to evaluate clinical practices.

Major areas of professional interest for concentrators include clinical epidemiology and biostatistics, cost-effectiveness analysis, medical decision analysis, health services research, quality improvement in health care, and measurement of health-related quality of life. The concentration is limited to clinicians enrolled initially in the Summer Program in Clinical Effectiveness.

Physicians are prepared for clinical research responsibilities and for leadership roles in evaluating and improving all aspects of health care delivery. Along with the broad perspective the program offers on general aspects of public health, this training provides a basis for identifying the health policy implications and public health benefits of the results of clinical investigations.

Family and community health This concentration focuses on the promotion of health and the prevention of disease in populations by preparing health professionals with leadership skills in public health. Courses emphasize strategies for establishing health objectives, data collection and analysis, the management of fiscal and manpower resources, consultation, communication, advocacy, and policy formation in the public sector. Beyond the MPH core requirements, students are encouraged to develop expertise in a focus area geared to their professional interests. Areas of interest include maternal and child health, women and health, mental health and substance abuse, community health, and health promotion and disease prevention.

The program, especially geared toward social workers, prepares students for positions in diverse public health and nonprofit settings, including federal, state, and local government; advocacy groups; voluntary health organizations; and community-based primary care settings. Posts filled by program graduates include state health director; medical director of programs for child, adolescent, or women's health; health policy analyst; and health educator. Others have gone on to academic positions.

Health care management This concentration explores the growing role of managed care in the health care enterprise. Beyond the MPH core requirements students choose either a management or a policy area of interest; they then select from clusters of courses to gain depth in their chosen area.

Graduates assume leadership positions in health care organizations that provide direct care (such as hospitals, group practices, and home health agencies), those that pay for and/or organize health care (such as governments, health insurers, and health maintenance organizations), and those that supply direct-care providers (such as pharmaceutical companies and biotechnology firms). Program graduates fill many roles—from consultants and staff analysts, to middle-management and executive positions.

International health This concentration enables students to work toward health improvement by taking account of demographic and epidemiologic changes; the organization of health care and evolving patterns of health care demand; new scientific knowl-

MARIA Trent

MASTER OF PUBLIC HEALTH STUDENT

Maria Trent came to Boston in the fall of 1998 as a fellow in adolescent medicine at Children's Hospital, Boston. She had previously earned a BA in psychology from Yale University and an MD from the University of North Carolina, Chapel Hill, and completed her pediatric residency at the Children's National Medical Center in Washington, DC. She turned to public health as a way to become engaged in policy issues and research.

Trent's primary field of interest is young women's reproductive health. As part of her fellowship at Children's, Trent is studying an endocrine disorder called polycystic ovary syndrome and its effects on the quality of life of adolescent girls. She became interested in the topic after caring for patients in her clinical work. "There were no studies on adolescent girls and how it affects their life," she says. "I'm hoping my work will be a springboard to help young women who have [the syndrome]."

Looking forward, Trent would like to combine academic practice with a career as a clinical researcher and advocate for young people.

edge and technology; and the roles of professionals in policy, law, communications, and advocacy. It also assists them in finding new ways to strengthen national and institutional capacities for health policy making and management. The international health concentration has several areas of professional interest, including international health policy and management; population, reproduction, and child health; infectious disease epidemiology; research and evaluation methods; health promotion; and humanitarian studies. The last area focuses on population support during war, civil conflicts, or disaster and features a three-month summer field placement.

The program is intended to prepare health professionals for leadership roles in the practice of international health, with a special emphasis on the health problems of populations in developing countries. Graduates of the program work in national ministries of health, international organizations, donor aid agencies, private voluntary organizations, research and academic institutions, and the private sector.

Law and public health The course of study introduces lawyers to the science of public health, provides them with skills in analysis of public health problems, and allows them to design a curriculum that will meet their particular interests. Beyond the MPH core requirements lawyers are encouraged to develop an area of interest by choosing among clusters of recommended courses in such fields as health care delivery or environmental health.

The concentration is designed to train leaders in the field of public health law. Graduates are prepared for positions in a variety of settings, including work in a health law or environmental section of a law firm; positions in local, state, and federal government; or posts in academia.

Occupational and environmental health This concentration focuses on workplace and environmental hazards, the physiologic and biomechanical aspects of work, the risks posed by the interaction of genetic and environmental factors, and a practical approach to solving health problems in various work and com-

MASTER OF PUBLIC HEALTH IN INTERNATIONAL HEALTH FOR PHYSICIANS

HSPH is planning to establish an MPH program in international health for physicians from less-developed countries, especially those who have completed their clinical training and have practiced for at least three years in a specialty or in public health. This MPH program will be partly residential and will take two years (including two summer sessions) to complete. The objective is to allow the physicians in the program to retain their full-time employment. Courses will be offered at HSPH each summer during a five-week session, followed by structured distance-learning experiences and a yearlong practicum.

Though the schedule is still tentative, the first students in this program are currently expected to matriculate in July 2002, which would require that applications be received by December 15, 2001.

For more information, please consult the HSPH Web site at http://www.hsph.harvard.edu.

CONTACT INFORMATION

For more information about the MPH program or the summer MPH in quantitative methods or clinical effectiveness, please contact Roberta Gianfortoni, director for professional education, Office for Professional Education, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-0090
Fax: 617-432-3365
E-mail: rgianfor@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/mph

munity settings. The concentration features three areas of interest: occupational/environmental medicine, occupational health, and environmental health.

The program is designed for physicians and other professionals who intend to practice occupational/environmental medicine or to hold responsible positions in occupational and/or environmental policy and management. The occupational/environmental medicine area is intended for physicians who wish to satisfy the requirements of the American Board of Preventive Medicine for certification in occupational and environmental medicine. The requirements for the master of occupational health (MOH) degree are similar to those of the MPH in occupational medicine; physicians may elect either degree. This concentration also fulfills the first-year requirements of the two-year Occupational and Environmental Medicine Residency.

Quantitative methods The concentration emphasizes study design, data analysis, and the application of quantitative methods to decision making and to research in public health. Beyond the MPH core requirements concentrators must take an additional 2.5 credits of introductory epidemiology and 7.5 credits in intermediate/advanced biostatistics, epidemiology, or decision sciences and an approved *d* period practice course. At HSPH and elsewhere within the university, concentrators may choose from advanced quantitative courses that include biostatistics, epidemiology, decision sciences, demography, needs assessment, and evaluation. An area of interest in decision science is offered as an option.

The program is geared toward public health work in which quantitative methods are central. It is designed for both midcareer health professionals and those in the early stages of their careers. Program graduates commonly supervise population-based health research in government, health care institutions, and private industry. Many graduates practice in academic medicine.

DIVISION OF BIOLOGICAL SCIENCES

The Division of Biological Sciences is an umbrella organization encompassing the HSPH Departments of Cancer Cell Biology, Immunology and Infectious Diseases, Nutrition, and Environmental Health. In most of these departments, two doctoral degrees are offered: the doctor of philosophy (PhD) and the doctor of science (SD). The PhD programs generally center on laboratory-based investigation in the biological sciences, whereas the SD programs emphasize epidemiological analysis. The PhD program is administered by the Division of Biological Sciences.

DOCTOR OF PHILOSOPHY IN BIOLOGICAL SCIENCES IN PUBLIC HEALTH

Students wishing to study cellular and molecular biology or physiology as it pertains to major problems in public health should apply to the PhD Program in Biological Sciences in Public Health (BPH). This program offers the PhD degree through Harvard University's Graduate School of Arts and Sciences.

The BPH program offers a firm foundation in the basic biomedical sciences, as well as in epidemiology and biostatistics. The program also features interdisciplinary training, with students taking courses in several different departments to meet their individual requirements. All students complete core course requirements in biochemistry, cell biology, genetics, microbiology, and physiology and elective courses during their first two years of study. Elective courses cover principles of toxicology, introductory cancer biology, genetic toxicology, cell response to mutagens and carcinogens, human physiology, advanced respiratory physiology, advanced topics in physiology, immunology and immunology of infectious diseases, cellular and molecular biology of parasites, and the science of human nutrition.

Participating HSPH departments offer PhD programs in the following areas:

- cancer cell biology (radiobiology; toxicology)
- environmental health (physiology)
- immunology and infectious diseases (immunology and molecular biology of parasitic and other infections)
- nutrition (biochemistry; cardiovascular biology)

These programs are described in the departmental sections of this catalog.

AEISHA Robb

DOCTORAL STUDENT, DIVISION OF BIOLOGICAL SCIENCES

Jamaican native Aeisha Robb received her AB/AM in biology from Harvard University in 1998. She conducted her research in Professor Marianne Wessling-Resnick's laboratory in the HSPH Department of Nutrition, where she is currently studying cellular iron metabolism. Robb states, "I like HSPH because I can apply my research in a public health context. This is one of the few programs where, although you are in the lab answering biology questions, you are also exposed to disease-related research and public health issues."

Last summer Robb did an internship at the Tropical Metabolism Research Institute at the University of the West Indies in Kingston, Jamaica, conducting research that the institute hopes to use in its study of malnutrition. "That kind of work is the type of thing I might want to do in the future," she says.

COURSES OF INSTRUCTION

Please note that courses listed are subject to change. Complete course descriptions are available at http://www.hsph.harvard.edu/registrar/courses.

Interface of Biology and Public Health: Core Knowledge for the 21st Century

Biological Sciences Seminars

Pathophysiology of Human Disease

Membrane Trafficking

Frontiers of Cardiovascular Biology

Independent Study, Laboratory Rotations

CONTACT INFORMATION

For application materials and information about admission to the PhD Program in Biological Sciences in Public Health (program 8500), please contact the Graduate School of Arts and Sciences Admissions Office, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315

The deadline for application to the PhD program is December 14, 2001.

Applicants who have specific questions about the PhD program may contact Ruth Kenworthy, administrator, Division of Biological Sciences, 655 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4470
Fax: 617-432-0433
E-mail: rkenwort@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/Academics/dbs/bph/index.html

CONTACT INFORMATION

For more information on the Division of Public Health Practice or the programs sponsored by the division, please contact Betty Johnson, assistant director for curriculum development and training, the Division of Public Health Practice, 1552 Tremont Street, Boston, MA 02120.
Phone: 617-496-8064
Fax: 617-495-8543

For more information about research and training in molecular epidemiology, please contact Karl T. Kelsey, MD, MOH, Departments of Cancer Cell Biology and Environmental Health, 665 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-3313
Fax: 617-432-0107
E-mail: kelsey@hsph.harvard.edu

For more information about courses related to women, gender, and health, please contact Meridith Eastman, Department of Maternal and Child Health, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1080
Fax: 617-432-3755
E-mail: meastman@hsph.harvard.edu

DIVISION OF PUBLIC HEALTH PRACTICE

The Division of Public Health Practice serves as a conduit between the work of HSPH academic departments, governmental and corporate agencies, and the community. The mission of the division encompasses education, research, and service. Through education the division ensures that its students graduate with the core competencies of puhlic health, including assessment, policy formulation, and quality assurance, and with the vision to become effective public health leaders. Through research the division advances current methods of collahorative inquiry to evaluate questions raised in community-based public health practice, as well as to address the broader policy issues concerning the health effects of social inequality. Through service the division enhances the health of underserved communities by fostering collaborative efforts between HSPH faculty, staff, and students and community-based organizations, health departments, health care providers, and public schools to develop and implement sustainable innovative strategies.

Programs included under the umbrella of the division are the Minority Postdoctoral Fellowship Program, the Office of Government and Community Programs, the Preventive Medicine Program, the Program for Health Care Negotiation and Conflict Resolution, the Program to Eliminate Health Disparities, and the Violence Prevention Program.

OTHER INTERDISCIPLINARY PROGRAMS

INTERDISCIPLINARY PROGRAM IN MOLECULAR EPIDEMIOLOGY

Molecular epidemiology, which encompasses a novel approach to the study of disease occurrence, is a focus of attention in several of the school's departments. Faculty members in the Department of Cancer Cell Biology, for example, use a molecular approach to study constitutional and somatic genetic alterations associated with cancer susceptibility, disease progression, and tumor biology. In the Department of Environmental Health, ongoing research utilizes biomarkers of exposure and exposure-related disease, as well as gene-environment interaction. The Department of Epidemiology is conducting molecular research in disease mechanism, outcome, and susceptibility. Members of the Department of Biostatistics are developing new methods for understanding molecular and genetic parameters governing disease occurrence. Finally, researchers in the Department of Nutrition are examining whether variation in enzymes that metabolize nutrients alter the relations of diet and disease. Prospective doctoral students must apply to one of the participating departments, and the degree will be issued from that department. Students are responsible for completion of degree requirements of the home department in addition to the program's core requirements in biology, genetics, exposure assessment, and epidemiology.

PROGRAM IN THE EPIDEMIOLOGY OF INFECTIOUS DISEASE

Education and research on aspects of infectious disease occur in a number of HSPH departments, including the Departments of Environmental Health, Epidemiology, Immunology and Infectious Diseases, Nutrition, and Population and International Health. These departments participate in the Program in the Epidemiology of Infectious Disease, which focuses on population studies incorporating both epidemiologic and laboratory methods. This doctoral program is intended for those students who desire careers in research and teaching in infectious disease. Prospective students must apply to one of the participating departments, and the degree will be issued from that department. Students are responsible for fulfilling the doctoral requirements of the home department in addition to the program's core requirements in biology, quantitative methods, and substantive infectious disease.

Alternatively the Departments of Epidemiology, Immunology and Infectious Diseases, and Population and International Health offer discipline-oriented doctoral or master's degree programs. Please refer to the appropriate sections of this catalog for descriptions of these discipline-centered degree programs.

WOMEN, GENDER, AND HEALTH

Several departments offer courses designed to increase understanding of the health of girls and women throughout the life cycle, with gender and biology understood as determinants of health, disease, and well-being. Faculty members of the interdepartmental working group on women, gender, and health offer an interdepartmental course, and the group maintains a list of HSPH and non-HSPH courses that are relevant to women's health.

INSTITUTES & CENTERS

THE SCHOOL HAS ESTABLISHED SEVeral institutes and centers to advance research in areas of importance to health. These efforts tend to be multidisciplinary in their approach, bringing together faculty from several HSPH departments and, in some instances, from several Harvard schools. Faculty affiliated with the programs offer courses in their field of interest through the school's academic departments and often provide opportunities for student involvement in research.

Center for Biostatistics in AIDS Research

Director: Stephen Lagakos, MPhil, PhD
Executive director: Janet Andersen, MS, SD
For more information, contact Janet Andersen
Phone: 617-432-2814
Fax: 617-432-2843
E-mail: andersen@sdac.harvard.edu

Center for Health Communication

Director: Jay A. Winsten, PhD
For more information, contact Terri Mendoza
Phone: 617-432-1038
Fax: 617-731-8184
E-mail: tmendoza@hsph.harvard.edu

Center for Quality of Care Research and Education (QCARE)

Director: R. Heather Palmer, MB, BCh, SM
For more information, contact Mary McCann
Phone: 617-432-2027
Fax: 617-432-3199
E-mail: qcare@hsph.harvard.edu

Center for the Prevention of Cardiovascular Disease

For more information, contact Michelle Bell
Phone: 617-432-1778
Fax: 617-432-2980
E-mail: bell@cvlab.harvard.edu

François-Xavier Bagnoud Center for Health and Human Rights

Director: Stephen P. Marks, diplôme, PhD
For more information, contact Paula Pech
Phone: 617-432-0656
Fax: 617-432-4310
E-mail: fxbcenter@igc.apc.org
Web: http://www.hri.ca/partners/fxbcenter/

Harvard AIDS Institute

Chair: Myron (Max) Essex, DVM, PhD
Executive director: Richard Marlink, MD
For more information, contact
Phone: 617-432-4400
Fax: 617-432-4545
E-mail: hai@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/hai

Harvard Center for Cancer Prevention

Director: David J. Hunter, MB, BS, MPH, SD
For more information, contact
Phone: 617-432-0038
Fax: 617-432-1722
E-mail: hccp@hsph.harvard.edu

Harvard Center for Children's Health

Web: http://www. hsph.harvard.edu/children

Harvard Center for Population and Development Studies

Director: Michael R. Reich, PhD
For more information, contact Winifred M. Fitzgerald
Phone: 617-495-3002
Fax: 617-495-5418
E-mail: wmfitz@hsph.harvard.edu
Web: www.hsph.harvard.edu/hcpds

Harvard Center for Risk Analysis

Acting director: George Gray, PhD
For more information, contact Nkwamzi Sabiti
Phone: 617-432-4497
E-mail: nsabiti@hsph.harvard.edu
Web: http://www.hcra.harvard.edu

Harvard Center for Society and Health

Director: Ichiro Kawachi, MD, PhD
For more information, contact Patricia Carter
Phone: 617-432-4870
Fax: 617-432-3123
E-mail: pcarter@hsph.harvard.edu

Harvard Education and Research Center for Occupational Safety and Health

Director: David C. Christiani, MD, SM, MPH
For more information, contact Jean Economos
Phone: 617-432-2422
Fax: 617-432-0219
E-mail: Jeconomo@hohp.harvard.edu
Web: http://www.hsph.harvard.edu/erc

Harvard Injury Control Research Center

Director: David Hemenway, PhD
For more information, contact Mary Kate Newell
Phone: 617-432-2123
Fax: 617-432-4494
E-mail: hicrc@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/hicrc

John B. Little Center for Radiation Sciences and Environmental Health

Director: John B. Little, MD
For more information, contact Martha Cassin
Phone: 617-432-0054
Fax: 617-432-5236
E-mail: mcassin@hsph.harvard.edu

Kresge Center for Environmental Health

Director: Joseph D. Brain, SM, SM, SD
For more information, contact Tim Sloate
Phone: 617-432-3483
Fax: 617-277-2382
E-mail: tsloate@hsph.harvard.edu

ACADEMIC

summer programs

SUMMER PROGRAM IN CLINICAL EFFECTIVENESS

THE SUMMER PROGRAM IN CLINICAL EFFECTIVENESS—affiliated with Brigham and Women's Hospital, Massachusetts General Hospital, and Harvard Medical School—is intended for physicians who have completed their residencies and wish to obtain the quantitative and analytical skills needed for careers in clinical research. Candidates must be fellows or faculty members and are usually sponsored by their clinical departments or divisions.

Students attend an intensive, seven-week, 15-credit summer program, comprising courses in biostatistics, epidemiology, and health policy and management. Upon completion of the summer program, qualified participants who apply and are admitted to a degree program may apply these academic credits toward the requirements for either a master of public health (MPH) or a master of science (SM) degree.

HSPH offers two specifically relevant degree programs: the MPH with a concentration in clinical effectiveness and the SM in epidemiology, with an area of interest in clinical epidemiology. Qualified participants unable to attend class during the regular academic year may fulfill requirements for the SM in epidemiology or the MPH degree program by attending classes during a second summer period (for the SM) or a third summer period (for the MPH), and by completing a supervised research project.

SUMMER SESSION FOR PUBLIC HEALTH STUDIES

The Harvard Summer Session for Public Health Studies introduces students to the core areas of public health in two intensive sessions. Courses in the program help students develop the ability to define, assess, and evaluate the health needs of populations; to participate in the development of health policy; and to assure the delivery of health services.

Students in the Summer Session attend one or two sessions in July and August. The 2001 curriculum includes courses in biostatistics, epidemiology, health care management, health policy, ethics, environmental health, and social and behavioral science. Each course offers 2.5 credits, and the maximum recommended course load is 5 credits (two courses) per session. Because the course work is very intensive and fast-paced, students registered for two courses in a session should not have other work commitments.

The Summer Session is intended for health professionals in training or those who are considering a mid-career change into public health and feel the need to develop their skills. Participants include public health professionals, primary care practitioners, physicians engaged in the evaluation of health care delivery and management, physicians in training (including preventive medicine residents and medical students in an MD/MPH joint-degree program), and candidates for a part-time MPH program. Students accepted for admission to an HSPH degree program may choose to begin their studies early by enrolling in the Summer Session; these students will have greater flexibility in course selection during the academic year. Other students may subsequently seek admission to an HSPH degree program. Students eligible for the MPH in the quantitative methods or clinical effectiveness concentrations may apply for a summer MPH to be completed in three consecutive summers.

RELATED OFFERINGS

Clinical epidemiology area of interest, Department of Epidemiology, see page 22.

MPH concentrations in clinical effectiveness and in quantitative methods, see pages 54 and 56.

CONTACT INFORMATION

For information about the Summer Program in Clinical Effectiveness, or to request application materials, please contact Barbara Rosen, Division of General Medicine, Brigham and Women's Hospital, 75 Francis Street, Boston, MA 02115.
Phone: 617-732-5648
Fax: 617-732-5344
E-mail: brosen@partners.org

For more information about the Summer Session, please contact Hildi Keary, administrative assistant for summer programs, Office of Enrollment Services, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1052
Fax: 617-432-2009
E-mail: hkeary@hsph.harvard.edu
(specify Summer Session on subject line)
Web: http://www.hsph.harvard.edu/summer/brochure

For more information about the summer MPH degree program, please contact Roberta Gianfortoni, director for professional education, Office for Professional Education, 677 Huntington Avenue, Boston MA 02115.
Phone: 617-432-0090
Fax: 617-432-3365
E-mail: rgianfor@hsph.harvard.edu

admission & enrollment

ADMISSION TO DEGREE PROGRAMS

THE ADMISSIONS INFORMATION IN THIS SECTION PERtains to applications for degree programs offered by the Harvard School of Public Health (see inside front cover). Applicants should contact the Admissions Office for complete instructions and application forms.

Also note that application forms for PhD programs, offered under the auspices of the Graduate School of Arts and Sciences (GSAS), are different from those used by applicants to programs administered by HSPH; these forms must be obtained directly from GSAS. The GSAS application deadline is December 14, 2001.

HSPH APPLICATION DEADLINES

December 15, 2001, is the deadline for complete applications for all HSPH doctoral (SD and DPH) and master of science (SM) programs.

December 15 is also the deadline for applications to the MPH and MOH programs in the priority admission cycle. February 15, 2002, is the deadline for completing applications to MPH and MOH programs for review in a second cycle. Applicants should be aware that these degree programs may fill to capacity during the priority admission cycle.

Participants in the Summer Clinical Effectiveness and Summer Session programs matriculating in the 2002 summer program and wishing to apply for degree candidacy must meet application deadlines outlined above.

Applicants to the MPH or MOH programs who wish to participate in the Occupational and Environmental Medicine Residency must apply by September 1, 2001.

APPLICATION PROCEDURES AND REQUIREMENTS

Only applications that are complete will be processed and reviewed for admission. For an application to be considered complete, the Admissions Office must receive the following application materials by the deadlines indicated above:

- A completed and signed application form, a resume, and a 500-word essay written by the applicant. The essay should describe the applicant's academic and professional history, area of interest at HSPH, reasons for wanting to enroll in the degree program, and professional or academic career plans upon completion of the program.
- Official transcripts from all colleges, graduate schools, and/or professional schools attended, whether or not the courses taken appear to be relevant to a degree in public health. Applicants are expected to have a distinguished undergraduate record, as well as excellent performance in any graduate work undertaken.
- Letters of recommendation from at least three people who are well acquainted with the applicant's academic work and/or professional experience (recommendation forms are provided in the application packet).
- Official scores of the Graduate Record Examination (GRE). While GRE scores are strongly preferred, some other tests may be substituted in circumstances specified in the application packet. The requirement for scores from a standardized test will not be waived on the basis of academic or professional background.
- Official scores of the Test of English as a Foreign Language (TOEFL), if applicable. Applicants (including those who have been U.S. citizens or permanent residents for less than one year) from countries where English is not the language of instruction must submit a score from the TOEFL. Those who have already taken the TOEFL may submit the score as long as it is not more than two years old.
- A nonrefundable application fee of U.S. $60, in the form of a check drawn on a bank in the United States, a postal money order, or an international money order payable to the Harvard School of Public Health.

Applicants may apply to only one degree program and must satisfy the requirements of the department or program to which they are applying. Individuals wishing to apply for a joint degree in two departments should submit a petition requesting consideration by both departments; requirements for admission to both must be satisfied. Applicants to doctoral programs must demonstrate the ability to undertake original research. All prospective students must apply for either full-time or part-time status. Most international students are eligible for full-time study only.

Admission is granted for the fall semester of a particular year (currently September 2002). Students unable to enroll at that time may request a deferral but may be required to reapply. Applicants who require an early decision should adhere to the application deadlines for the year before the one in which they wish to enroll (for example, they may apply during the winter of 2001–02 for admission in September 2002).

APPLICATION REVIEW

Applicants are notified as soon as possible (in writing) about the status of their application. The Admissions Office will either confirm that an application is ready for review or will specify any missing documents. The decision of the Committee on Admissions and Degrees is final and is not subject to appeal.

For all HSPH programs the Committee on Admissions and Degrees considers the academic ability of applicants, the relevance of their previous education and experience, and their overall qualifications for graduate education in public health, including those qualities of character that reflect upon an individual's suitability to be a public health professional. In decisions about admission and financial aid, HSPH does not discriminate against individuals on the basis of race, color, sex, sexual orientation, religion, age, national or ethnic origin, political beliefs, veteran status, or disability.

MINORITY STUDENTS

The increased participation of underrepresented groups in public health practice and research is essential to the advancement of health, and the school is committed to expanding the diversity of its faculty, staff, and student body. Members of U.S. minority groups are urged to identify themselves for special recruitment efforts by the Admissions Office.

TUITION AND FEES, JULY 2001–JUNE 2002

TUITION FOR FULL-TIME MASTER'S DEGREE STUDENTS AND SPECIAL STUDENTS	
(20-credit minimum and 25-credit maximum per semester, fall and spring; may not exceed 45 credits per year)	$25,050 per year
TUITION FOR PART-TIME MASTER'S DEGREE STUDENTS, SPECIAL STUDENTS, AND AFFILIATES	
(1–19 credits per semester, fall and spring, with a maximum of 15 summer credits. Part-time students may accrue 45 credits for the comparable full-time tuition rate.)	$ 630 per credit
TUITION FOR NONRESIDENTIAL MASTER OF SCIENCE IN HEALTH CARE MANAGEMENT	
	$27,040 for program
TUITION FOR FULL-TIME RESIDENT DOCTORAL STUDENTS	
(20-credit minimum and 25-credit maximum per semester, fall and spring; may not exceed 45 credits per year)	
Full-time, years 1 and 2	$25,050 per year
Full-time reduced, year 3	$12,525 per year
Facilities fee, year 4 to thesis defense	$ 3,130 per year
Thesis defense fee (final semester before graduation)	$ 1,340 one semester
TUITION FOR PART-TIME RESIDENT DOCTORAL STUDENTS	
Credits 1-80	$ 630 per credit
Credits 81-120	$ 315 per credit
Credits 121 to thesis defense	$ 80 per credit
Thesis defense fee (final semester before graduation)	$ 1,340 one semester
TUITION FOR NONRESIDENT DOCTORAL STUDENTS, FULL-TIME OR PART-TIME	
	$ 1,680 per year
TUITION FOR SUMMER SESSION 2001	$ 630 per credit
FEES	
Registration fee (summer, fall, spring)	$ 125 per semester
Late registration fee	$ 80
Late add/drop/change fee	$ 80 per petition
Leave of absence fee	$ 125 per semester
Health fees (see page 65)	

Note: Tuition rates are given in 2001–02 tuition dollars. Continuing students should expect an increase.

TUITION DEPOSIT AND FINANCIAL CERTIFICATION

Applicants who are granted admission must submit a $500 tuition deposit when confirming acceptance of the offer of admission. This deposit, which is nonrefundable, will be applied toward the student's tuition and fees.

Accepted applicants who are not U.S. citizens or permanent residents must demonstrate that sufficient funds are available in U.S. currency to pay the costs (tuition, fees, and living expenses) of the full period of their academic program.

International students supported by personal, family, or sponsors' funds not paid directly to Harvard University are required to deposit and retain funds adequate to cover the appropriate tuition, fees, and living expenses for the degree program; these funds must be held in a Boston-area bank in an account bearing the student's name. Students bringing their families to the United States must transfer and certify adequate funds for their support as well. (Please see page 66 for an estimate of living expenses in the Boston area.)

HEALTH FEES, SEPTEMBER 2001–AUGUST 2002

UNIVERSITY HEALTH SERVICES (UHS) FEE	SEMESTER	YEAR
Individual	$ 408.00	$ 816.00
Family (student plus spouse)	834.50	1,673.00
Family (student plus spouse and one child)	1,073.00	2,147.00

The University Health Services (UHS) provide comprehensive prepaid medical care such as physical examinations, physician visits, laboratory tests, psychological counseling, and emergency services. The UHS fee is compulsory for all degree candidates and special students registered for more than 10 credits in a semester. Others may elect to waive UHS coverage; this must be done before the first day of fall registration.

BLUE CROSS/BLUE SHIELD (BC/BS) MEDICAL INSURANCE	SEMESTER	YEAR
Individual	$ 334.00	$ 668.00
Family (student plus spouse)	834.50	1,668.00
Family (student plus spouse and one child)	1,254.00	2,508.00

The Blue Cross/Blue Shield (BC/BS) plan provides extensive benefits for ambulatory and inpatient care not offered at UHS. BC/BS coverage is compulsory for all nonimmigrant international students and for all other students who do not have comparable insurance. International students whose spouse and/or children will also be living in the United States are required to enroll in the family plan. U.S. students who have comparable insurance may elect to waive BC/BS coverage; this must be done before the first day of fall registration.

Note: UHS and BC/BS coverage extends from September 1 through August 31.

ADMISSION TO NONDEGREE STATUS

AFFILIATES

Harvard faculty and staff, employees of Harvard-affiliated hospitals, HSPH alumni, and certain other Boston-area public health professionals may register for a maximum of 10 credits per semester as nondegree affiliates of the school. Affiliates must register in person at the HSPH Registrar's Office. Please call the Registrar's Office to learn the exact dates for affiliate registration.

Enrollment of affiliate students in specific courses is subject to the availability of space and permission of the instructor and the registrar; if classes fill to capacity, preference is given to HSPH degree candidates. Payment is on a per-credit basis and is due at the time of registration. Payment is not refundable unless the student is unable to take the desired course because it is filled to capacity. Affiliate students may neither audit courses nor cross-register at other Harvard schools or MIT.

SPECIAL STUDENTS

Individuals who do not fall into one of the categories listed above may apply for special student status. Applicants for special student status are subject to the same admission and registration requirements, deadlines, and procedures as applicants for degree candidacy. U.S. citizens and permanent residents may apply to the Admissions Office for full-time or part-time special student status. As noted previously, foreign applicants are eligible for full-time status only. Admission to special student status is limited to one academic year. The deadline for applying for special student status is December 15, 2001.

SUBSEQUENT APPLICATION FOR DEGREE CANDIDACY

Affiliates and special students wishing to be admitted to degree candidacy must apply and will be considered on the same basis as other applicants for admission. At the time of their application, affiliates and special students who have taken courses at the school within the preceding three years may count up to 20 credits retroactively as part of the academic credit requirements.

CONTACT INFORMATION

For instructions and applications forms for PhD programs, please contact the Admissions Office, Graduate School of Arts and Sciences, Harvard University, 8 Garden Street, Cambridge, MA 02138.
Phone: 617-495-5315
Web: http://www.gsas.harvard.edu/admissions

Prospective degree candidates or special students who wish to request application materials, have questions about admission requirements, require assistance with the application process, or wish to visit the school should contact HSPH Admissions Office, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1031
Fax: 617-432-2009
E-mail: admisofc@hsph.harvard.edu

On-line application information and forms are also available on the admissions page of the HSPH Web site.
Web: http://www.hsph.harvard.edu/admissions

For information about minority student recruiting, please contact Richard Wallace, senior admissions officer, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-4175
Fax: 617-432-2009
E-mail: rwallace@hsph.harvard.edu

For more information about billing procedures or the financial aid application process, please contact the HSPH Office of Student Financial Services, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1867
Fax: 617-432-2009
E-mail: osfs@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/finaid

2001–02 STUDENT EXPENSE BUDGET (9 MONTHS)

Full-time tuition[1]		$25,050
University Health Services fee[2]	$408/semester	$ 816
BC/BS health insurance fee[3]	$334/semester	$ 668
Registration fee	$125/semester	$ 250
Books/supplies	$600/semester	$ 1,200
Living allowances		
Rent/utilities	$900/month	$ 8,100
Food	$277/month	$ 2,493
Personal	$327/month	$ 2,943
Local transportation	$55/month	$ 495
SUBTOTAL[4]		**$42,015**
Federal student loan fees[5]	3%	$ 555
TOTAL		**$42,570**

1. For part-time students, tuition charges are assessed based upon the number of credits for which a student is registered. For 2001–02, the charge is $630 per credit hour. Please refer to the HSPH Tuition and Fees Schedule for more information on billing procedures and payment requirements for part-time students. This is available from the HSPH Registrar's Office by calling 617-432-1032.

2. Part-time students taking 10 credits or fewer may waive the University Health Services fee if a waiver form is completed prior to registration.

3. The BC/BS health insurance fee can be waived upon proof of comparable coverage. The waiver form must be submitted prior to registration. Students with a spouse and/or children may request family coverage at a fee of $1,668 for an individual with one dependent or $2,508 for an individual with two or more dependents.

4. International students in the 40-credit programs must be able to demonstrate support of this level ($42,015) prior to the issuance of an appropriate visa. Other master's degree and doctoral candidates must demonstrate a 12-month support level of at least $47,721. Students with additional family members must demonstrate the following levels of support:

9-month	12-month	9-month	12-month
Student & spouse	Student & spouse	Student, spouse, & 1 child *	Student, spouse, & 1 child *
$46,746	$52,641	$50,986	$58,875

*For each additional child, add $1,485 for the 9-month and $1,980 for the 12-month budget.

5. Loan fees are based on borrowing $18,500 in Federal Direct Loans, available to U.S. citizens and permanent residents only.

Applicants who have taken HSPH courses within the past three years while enrolled at another Harvard school or at MIT may petition to count up to 20 credits toward their HSPH degree only if the courses taken did not count toward another degree. Up to 20 credits of tuition previously paid to HSPH may be counted toward the school's tuition requirement for the degree program. Students whose credits as a cross-registrant from another school are transferred to their program at HSPH must pay tuition to HSPH for those credits.

FINANCIAL AID

ESTIMATED STUDENT EXPENSES

The budget information above is intended to provide students with an estimate of how much it will cost to spend nine months at HSPH. These figures are for the 2001–02 academic year; applicants for subsequent years should anticipate increases.

MATRICULATION IN SUMMER PROGRAMS

Tuition for the Clinical Effectiveness Program and the Summer Session for Public Health Studies in 2001 is $630 per credit. HSPH offers a special program in English communication in advance of the regular orientation for entering students; tuition for the English communication program is $775 for summer 2001. Health fees and insurance for summer 2001 are $111.50, and living expenses, including rent, are about $1,550 a month.

SOURCES OF FINANCIAL AID

The Office of Student Financial Services and academic departments make every effort to assist students in finding resources to finance their education at HSPH. It should be noted that the school's need-based grants are extremely limited. Students are urged to investigate all sources of support, including employers, government agencies, and civil and religious organizations.

Financial aid is available in the form of grants, scholarships, loans, and work programs, as follows:

Grants and scholarships Some departments may have grants and departmental scholarships that may cover tuition expenses plus a stipend. Eligibility is generally based on career goals, academic merit, experience, and U.S. citizenship or permanent residency. Other grants may also be available, and eligibility for them varies according to departmental priorities. Please contact the department to which you are applying for additional information.

The university offers a number of restricted scholarships to students who meet specific criteria. Please refer to the HSPH financial aid application packet for more information. An HSPH application for financial aid is required.

Federal student loans The Office of Student Financial Services administers the Federal Direct Loan and Federal Perkins Loan programs. The maximum amount a student may receive under the Direct Loan program is $18,500 per academic year. Students with extreme financial need may also be eligible for a Perkins Loan up to $6,000. To apply for these loan programs, a student must

- be a U.S. citizen or permanent resident
- not be in default on a prior federal loan or owe a refund on a federal student grant
- be enrolled at least half-time
- complete the financial aid application process

Alternative student loans The Office of Student Financial Services works with lending institutions to offer credit-based educational loans to students whose educational expenses exceed the amount of the base federal loan package. These loans are the last resort a student should utilize as the interest rate and repayment terms are not so favorable as the federal programs. International students with a U.S. citizen or permanent resident co-signer may be able to utilize these programs.

Work programs Some students may obtain part-time employment as research or teaching assistants in their academic departments. Additionally the school participates in the Federal Work-Study Program, which subsidizes between 50 percent and 75 percent of the on- or off-campus employer's costs. Eligibility for this program is the same as for federal student loans.

Please refer to the instruction booklet that accompanies the financial aid application forms for additional information about loan and work programs.

REGISTRATION

Students receive course descriptions and information about course meeting times, registration procedures and requirements, course load requirements, and payment of tuition and fees prior to registration. Every resident degree candidate is expected to register in person on the date specified (September 10 for new students in academic year 2001–02). Students intending to cross-register for courses in other Harvard schools or at MIT should be aware that registration deadlines and academic calendars vary from school to school; these students must conform to the registration requirements of the school into which they are cross-registering as well as those of HSPH.

For information about registration or admission to affiliate status, please contact the HSPH Registrar's Office, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1032
Fax: 617-432-2009
E-mail: registra@hsph.harvard.edu
Web: http://www.hsph.harvard.edu/registrar

For more information about student health insurance please contact the Student Insurance Office, Harvard University Health Services, 75 Mt. Auburn Street, Cambridge, MA 02138.
Phone: 617-495-2008
Fax: 617-496-6125
Web: http://www.uhs.harvard.edu

student life

BOSTON, MASSACHUSETTS

THE HARVARD SCHOOL OF PUBLIC HEALTH IS located in Boston, Massachusetts, an important center of American history, culture, commerce, and education. Boston is New England's largest and one of America's oldest cities. Its colonial past is still evident in the cobblestone streets of Beacon Hill, a striking contrast to the skyscrapers of the business district. The Boston area is home to more than sixty colleges and universities and many renowned teaching and research hospitals.

The area hosts major art museums, museums devoted to science and children, the famous Boston Symphony and Boston Pops, several professional theater companies, and six professional sports teams. The city offers elegant shopping and diverse dining, from casual ethnic restaurants to haute cuisine. Compact in scale, Boston invites walking but also provides extensive public transportation.

The proximity of Cape Cod and Maine beaches, the mountains of Vermont and New Hampshire, and the charming villages of New England add to the appeal of Boston, one of America's most desirable places to live and study.

HARVARD UNIVERSITY

Founded in 1636, Harvard University is the oldest institution of higher learning in the United States. It has educated six presidents of the United States, and its faculty has produced more than thirty Nobel laureates. Today Harvard has an enrollment of more than 18,000 degree candidates, and an additional 13,000 students are enrolled in the Harvard Extension School. Including HSPH, the university has ten graduate and professional schools. Its ninety individual collections constitute the largest academic library in the world, and ten art and science museums further enrich the quality of intellectual life.

The university has campuses in both Cambridge, Massachusetts, and Boston.

RESOURCES AND SERVICES FOR HSPH STUDENTS

The school's main buildings for research, teaching, and administration are located in the heart of Boston's hospital district and Harvard University's Longwood campus. The facilities adjoin those of Harvard's Medical School, School of Dental Medicine, and Francis A. Countway Library of Medicine and are near Children's Hospital Medical Center, Beth Israel Deaconess Hospital, Brigham and Women's Hospital, and other Harvard-affiliated hospitals. The school is within walking distance of many cultural institutions, such as Boston's Museum of Fine Arts, and public transportation is readily available to other parts of Boston and Cambridge, where students may cross-register for courses at other Harvard schools and at MIT. A shuttle bus runs between the Longwood campus and Harvard Yard in Cambridge.

FRANCIS A. COUNTWAY LIBRARY OF MEDICINE

The Countway Library is the principal provider of library services to the school. In this library are the combined resources of the Harvard Medical Library and the Boston Medical Library. The Countway is one of the largest medical libraries in the country and houses over 630,000 bound volumes and 3,500 current journal titles. The library's Web site provides access to more than 500 full-text journals in the biosciences and medicine and to many electronic databases. The Countway also owns an extensive collection of historical materials dating from the fifteenth century. Students have borrowing privileges throughout the Harvard University library system. The Boston Public Library, MIT libraries, and other area libraries add to the total book and periodical resources available.

CONTACT INFORMATION

For more information about Shattuck House, housing alternatives, or services for disabled students, please contact the Office for Students and Alumni, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1035
Fax: 617-432-3184
Web: http://www.hsph.harvard.edu/housing

For more information about career services, please contact Peter Crudele, director of career services, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-1034
Fax: 617-432-3184
Web: http://www.hsph.harvard.edu/Admins/offstuds/ career.html

For more information about alumni activities, please contact Sudha Kotha, director of alumni programs, 677 Huntington Avenue, Boston, MA 02115.
Phone: 617-432-2401
Fax: 617-432-3184
E-mail: skotha@hsph.harvard.edu

INSTRUCTIONAL COMPUTING FACILITY

The HSPH Instructional Computing Facility is dedicated to serving the course work and research computing needs of the school's students and faculty. Resources include SUN Unix computers, X-terminals, IBM personal computers, Apple Macintosh computers, a Novell network, laser printers; a wide array of software, including statistical packages, programming languages, analytical programs, and word-processing packages; services such as remote dial-in, file transfer, electronic mail, connections to the Internet and World Wide Web, user assistance, short courses, and computer accounts for funded research. Many academic departments also provide computing resources for their students. Additional services, such as computer classes, discounted hardware and software, user groups, and technical support, are available through the offices of Harvard's University Information Systems.

OFFICE FOR STUDENTS AND ALUMNI

The Office for Students and Alumni provides a variety of support services and offers educational, social, and cultural programs to enhance the student experience at HSPH. Staff members are available to respond to the needs of individual students as they deal with the many demands of their academic and personal lives. The office also works closely with student government and other student groups to address collective student concerns. The provision of career services, administration of the school's residential facilities, assistance to students with disabilities, and liaison to alumni are encompassed within this office.

Office for Career Services The Office for Career Services provides career counseling, employment resources, and networking opportunities to assist students and alumni in expanding their employment prospects. The office brings numerous organizations to campus, both to present informational sessions and to interview prospective job applicants. Staff members conduct workshops on job-seeking strategies, interviewing skills, and resume and cover-letter writing, as well as organize panel discussions featuring public health professionals and HSPH alumni. In the Career Resource Center students have access to listings of current job openings, information about fellowships and internships, and resource directories. The office also maintains a Web site, which provides links to additional career and employment resources and to the Alumni Career Advisory Network, an on-line database of alumni willing to advise students about career options.

Student housing The Henry Lee Shattuck International House is operated by the school on a nonprofit basis for its full-time students and their families from the United States and abroad. In addition to providing living quarters, the facility offers a supportive environment for HSPH students. Located within a ten-minute walking distance of the school, the newly renovated apartment complex consists of three buildings with 70 furnished apartments of various sizes to accommodate single students, roommates, and families. Several apartments are wheelchair accessible. All apartments have a private kitchen and bath, free Internet and E-mail access via a data link to the school, two telephone lines, and interior cable access. Shared facilities include a computer room with fax and copy machines, a library, an exercise room, function rooms, a children's playroom, a laundry room, an indoor bicycle storage area, and a playground.

Demand for the apartments exceeds their availability, so apartments are assigned by lottery within certain categories. The Office for Students and Alumni holds a lottery in late May, and applicants are notified of the results in early June. A waiting list will be maintained by the office throughout the summer and fall for applicants who are not assigned an apartment during the initial process.

Applicants are assigned to particular categories based on the following guidelines: (1) new HSPH students are given priority; (2) generally 70 percent of the available apartments are reserved for international students, and 30 percent are rented to U.S. and Canadian students, with priority given to those coming from outside the New England and surrounding areas; and (3) applications are also sorted by the type of apartment desired. The maximum length of residency is two years, assuming residents maintain the status of full-time students. A partial year of residency counts as an entire year.

Students with disabilities The Office for Students and Alumni also furnishes a range of services to disabled students, including interpreters and note takers, tape recordings of class readings, arrangements for appropriate accommodations and transportation, and special services as necessary.

Office for Alumni Programs The Alumni Association of the Harvard School of Public Health enjoys an active membership of over 7,000 graduates worldwide. The association is governed by an elected council of twelve members who meet four times a year. With the assistance of the Office for Alumni Programs, regional gatherings of alumni are often organized in the United States and abroad by members of the association.

CHILD CARE FACILITIES

There are a number of child care facilities available to students on the Longwood and Cambridge campuses. Referrals and information are provided by the Harvard University Office of Work and Family and the Office of Work and Family at the Medical School. Arrangements should be made as early as possible, as facilities are quickly filled.

INTERNATIONAL STUDENTS

During the 2000–01 academic year, approximately 25 percent of HSPH students were foreign citizens, representing 47 countries. The experience international students bring to the school lends an important dimension to the academic program and adds to the diversity of the student population. International students organize many cultural events at the school and participate in the annual International Night talent show.

The Office for Students and Alumni assists foreign students in adjusting to life in the United States. The office sponsors Global Chat (a weekly lunchtime meeting that gives students an opportunity to practice their English while learning about each other's native countries) and organizes social events and local excursions. Staff members in the Office for Students and Alumni are available to meet with students to discuss personal or academic problems and to assist students and their families who have questions about living in Boston and the United States.

The Harvard International Office, located on the Cambridge campus, also provides a variety of services to students from abroad, including orientations, newsletters, and cross-cultural workshops. One program, the Friends of International Students, matches students with a person or family who will welcome them and ease their transition to the United States. Foreign student advisers from the Harvard International Office hold weekly office hours at HSPH to assist students with visa matters and to advise them on immigration regulations.

STUDENT ORGANIZATIONS

The Student Coordinating Committee (SCC) includes elected representatives from each department, from the master of public health program, and from the Division of Biological Sciences. The SCC meets regularly to discuss issues and plan activities related to student life at HSPH and provides a mechanism for working with members of the school's faculty and administration on schoolwide issues, for sponsoring seminars and other educational programs, for organizing social activities, and for arranging for student representation on several of the school's faculty committees. The SCC frequently sponsors or cosponsors collaborative activities with the school and the neighboring community, including tutoring programs, toy drives, and an annual dinner-dance for senior citizens.

Various student organizations at HSPH geared toward the interests of specific constituencies include the HSPH Minority Student Health Organization (MSHO); Ñ–The Spanish Speaking Committee; the Asian Club; Students of the African Diaspora; the Jewish Students Association; Women in Public Health; and the Lesbian, Gay, Bisexual, and Transgender Alliance. Other student organizations include the Health and Human Rights Committee, the Longwood Players, and the HSPH Pharmacogenomics Group.

CONTACT INFORMATION

For more information about child care centers in the area, please contact the Office of Work and Family at 617-495-4100; co-managers are Judy Walker and Cindy White. The Medical Center Office of Work and Family at 617-432-1615 can also provide information on support services, resources, and programs.

For more information about services offered by the Harvard University International Office, please contact the Adviser to Foreign Students and Scholars, Harvard International Office, 1350 Massachusetts Avenue, Cambridge, MA 02138.
Phone: 617-495-2789
Fax: 617-495-4088

ADMINISTRATIVE OFFICERS OF THE HARVARD SCHOOL OF PUBLIC HEALTH

Lawrence H. Summers, PhD, president of Harvard University

Barry R. Bloom, PhD, dean of the Faculty of Public Health

James H. Ware, PhD, dean for academic affairs

John H. Lichten, MSW, dean for administration and finance

Paul S. Riccardi, MEd, dean for administration and operations

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David A. Shore, PhD, associate dean for continuing professional education

Jay A. Winsten, PhD, associate dean for public and community affairs

Carolyn J. Everette, assistant dean for human resources

Stanley G. Hudson, MA, MBA, assistant dean for enrollment services

Zegenu Tsige, EdM, MEd, EdM, assistant dean for students and alumni

ON-LINE RESOURCES

A wealth of HSPH information can be accessed via the World Wide Web at http://www.hsph.harvard.edu. This site includes updated course, faculty, and educational information, and school news. Information about Harvard's other faculties can be found at http://www.harvard.edu.

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HSPH CATALOG 2001–02

Every effort is made to ensure the information contained in this catalog is accurate at the time of publication. However, the Harvard School of Public Health reserves the right to make changes without notice in tuition and fees, admission and degree requirements, courses of instruction, faculty, and other information contained herein. These changes will govern all students, including those who matriculated prior to the changes coming into effect.

NONDISCRIMINATION POLICY

As a matter of policy, law, and commitment, the Harvard School of Public Health does not discriminate against any person on the basis of race, color, sex, sexual orientation, religion, age, national or ethnic origin, political beliefs, veteran status, or handicap in admission to, access to, treatment in, or employment in its programs and activities. The following person has been designated to handle inquiries about nondiscrimination programs: Carolyn Everette, assistant dean for human resources, 677 Huntington Avenue, Boston, MA 02115 (phone: 617-432-1046). Inquiries about the application of nondiscrimination policies concerning race, color, national origin, age, sex, or handicap may also be referred to the Regional Director, Office for Civil Rights, U.S. Department of Education, J. W. McCormack POCH, Room 222, Post Office Square, Boston, MA 02109.

DISABILITIES

The university, in accordance with its obligations under the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, does not discriminate against qualified individuals with disabilities in admission or access to programs and activities. The Office for Students and Alumni assists all students with learning, manual, mobility, hearing, visual, and other disabilities.

RELIGIOUS HOLIDAYS

According to Chapter 151c, Section 2B, of the General Laws of Massachusetts, any student in an educational or vocational training institution, other than a religious or denominational training institution, who is unable, because of his or her religious beliefs, to attend classes or to participate in any examination, study, or work requirement on a particular day shall be excused from any such examination or requirement which he or she may have missed because of such absence on any particular day, provided that such makeup examination or work shall not create an unreasonable burden upon the school. No fees of any kind shall be charged by the institution for making such opportunity available to the student, and no adverse or prejudicial effects shall result to any student for availing himself or herself of these provisions.

CAMPUS SECURITY

In compliance with the Student Right-to-Know and Campus Security Act of 1990, the Harvard University Police Department publishes an annual security booklet entitled "Playing It Safe." The booklet describes Harvard's security policies, provides statistical information on the occurrence of crime on campus, and outlines some of the counseling programs the university offers. Students may obtain a copy of this booklet from the HSPH Admissions Office, 677 Huntington Avenue, Boston, MA 02115 (phone: 617-432-1031).

VOTER REGISTRATION

Massachusetts state law, as set forth in Chapter 51, Section 42E (Section 17 of Chapter 475 of the Acts of 1993), requires educational institutions to make available affidavits of voter registration. Eligible students may register to vote at registration, and mail-in registration affidavits are available from the Registrar's Office. Students from other states who desire to vote in a state other than Massachusetts may use the federal mail-in affidavit of voter registration or a mail-in form supplied by the state. These students must contact the appropriate state election official to receive the state form or may contact the Massachusetts Elections Division, Room 1705, McCormack Building, One Ashburton Place, Boston, MA 02108, for a federal form.

ACCREDITATION

The Harvard School of Public Health is accredited by the Council on Education for Public Health.

HARVARD SCHOOL OF PUBLIC HEALTH—ACADEMIC CALENDAR, 2001–02*

July 2	Registration for summer programs
July 3	Summer Program in Clinical Effectiveness and Summer Session for Public Health Studies begin
July 3–27	*s* period inclusive
July 4	Independence Day, a holiday
July 30–August 17	*t* period inclusive
August 20–31	English for Professional Communication program
September 5–14	Strategies for Success orientation program
September 10	Fall semester registration for new students
September 10–14	New-student orientation
September 14	Fall semester registration for returning students
September 17	*a* and *ab* period courses begin
October 8	Columbus Day, a holiday
November 9	*a* period courses end
November 12	Veterans Day, a holiday
November 13	*b* period courses begin
November 22–25	Thanksgiving recess
December 14	Final deadline for application to all doctor of philosophy (PhD) programs
December 15	Final deadline for application to all doctor of science (SD) and master of science (SM) programs; deadline for application to master of public health (MPH) and master of occupational health (MOH) programs in the priority admission cycle
December 20–January 1	Winter recess
January 18	*ab* and b period courses end
January 21	Martin Luther King, Jr., Day, a holiday
January 22–25	*e* period (optional special studies and field trips)
January 28	c and *cd* period courses begin
February 15	Final deadline for application to MPH and MOH programs
February 18	President's Day, a holiday
March 22	c period courses end
March 23–31	Spring recess
March 25–29	*f* period (optional special studies and field trips)
April 1	*d* period courses begin
May 24	*cd* and *d* period courses end
May 27	Memorial Day, a holiday
June 6	Commencement

* Students applying for admission to the 2002–03 academic year should be aware that the school is changing its academic calendar. In 2002 new-student check-in and orientation will begin on September 3; classes will begin on September 9; and the fall semester will end on December 20. January 2 through January 28, 2003, will be a period devoted to intensive course work or field study during which students will be required to engage in activities approved by their department or program. The spring semester will begin on February 3 and end on May 23. Commencement will take place on June 5.

HARVARD
School of Public Health
677 Huntington Avenue
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